JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XV JUNE, 1926 No. 6

BI-CENTENARY AND SESQUI-CENTENNIAL EVENTS.

Heroes and events of 150 years ago are recalled at this time when the Sesqui-Centennial of American Independence is being celebrated. Many of the events of about 1776, in the historic city of Fredericksburg and the Old Dominion, have a close relation to those in Philadelphia and the Keystone State during corresponding years. At this time the need of an American Pharmacopœia for the Army was recognized and resulted in the preparation of the Formulary[1] compiled and published at Lititz, Pa., by Dr. William A. Brown, a native of Virginia. The father of the U. S. Pharmacopœia, Lyman Spalding, was born June 5, 1775.[2]

Historical records relating to the birth of Hugh Mercer, as far as the date is concerned, are not in accord, the years 1720–1726 being given; there is definiteness however, as to his baptismal year, namely, 1726; hence, we may say he was born about 200 years ago. He was the son of Rev. William Mercer, who had charge of the Manse at Pittsligo, Aberdeenshire, Scotland, from 1720–1748.

As a young man, Hugh Mercer entered the school of medicine of Marischal College (University of Aberdeen), and graduated with high honors in 1744; this would indicate that the year of his birth antedates 1726. The young physician was just beginning to develop a medical practice when "The Young Pretender" reached Scotland and Dr. Mercer joined these forces as Assistant Surgeon, and after the former's defeat at Drummossie Moor, he deemed it advisable to depart for the United States, arriving in Philadelphia during the summer of 1746. Shortly thereafter he came to Greencastle, Pa., (?) (now Mercersburg) and established a medical practice and also an apothecary shop.

Dr. Mercer did not enjoy quiet life when there was work to do and so he took an active part in the military activities of this period; these are recorded in the pages of American history; few, if any, citizens of this country have a finer record of loyalty, courage and achievement, and he left to his posterity the heritage of a revered and honorable name. He was wounded at Fort Duquesne when

[1] See JOUR. A. PH. A., December 1920, p. 1132. [2] See JOUR. A. PH. A., August 1917, p. 675.

General Braddock was killed and here the friendship with General Washington was formed which continued until Brigadier General Mercer's death at the battle of Princeton, January 1777. The attachment which had developed for Washington induced Dr. Mercer in 1763 to move to Fredericksburg, Va., the former home-town of his friend. The histories of Fredericksburg by Quinn and Goolrick, and the "Life of General Hugh Mercer," by the latter, give an insight into the home, social, professional and business life and fraternal relations of many who laid the foundations of these United States. Here we find James Monroe, John Paul Jones, General Weedon, Gustavus Wallace, Mary the mother of Washington, and many notables of that period; here is located and still very active, Fredericksburg Lodge No. 4, in which Washington was obligated as a Mason and over which Dr. Mercer presided as Master for a year. These references are, however, incidental to the purpose of this writing.

Dr. Mercer married Isabella Gordon, daughter of John Gordon, and soon after coming to Fredericksburg he returned to the practice of medicine, and in 1764 opened the apothecary shop at the corner of Main and Amelia Streets—the firm being Mercer & Clement from 1771–1773 and, in November of 1773, was succeeded by Mercer & Julian. It is said that no other business has been conducted here since, but the building for many years was occupied as a dwelling; it is still standing and there is some prospect of its restoration by an historical society of Fredericksburg. Washington had a desk in this store from 1764 to 1776, at which he transacted business whenever he came to Fredericksburg (his mother lived here until her demise in 1789); it may be assumed that part of the business was concerned with the Washington Estate, but much of it related to the services for State and Country, in which he had the counsel of compatriots who met with him in Mercer's apothecary shop and around the open fire place at Rising Sun Tavern. "The Life of General Hugh Mercer" by John T. Goolrick has been drawn upon for most of these data.

On April 8, 1777, a committee of the Continental Congress, duly appointed, reported that "a monument be erected to the memory of General Mercer at Fredericksburg, in the State of Virginia, with the following inscription:

> "Sacred to the memory of Hugh Mercer, Brigadier-General in the Army of the U. S. He died on the 12th of January 1777, of the wounds he received on the 3rd of the same month, near Princeton, N. J., bravely defending the liberties of America. The Congress of the United States, in testimony of his virtues and their gratitude, has caused this monument to be erected."

The report slumbered until June 28, 1902, when it was made effective by Congress in directing that a monument at Fredericksburg, to perpetuate the name and fame of Hugh Mercer, be erected.

True it is that pharmacy may have had a small part in this patriot's life, for it was a life of action; still it was part of his work on the battlefield, in preparing for the needs of the wounded and suffering and during the few quiet years when the physician and apothecary served his patients and patrons at Greencastle and at Fredericksburg. The incidents mentioned bring out some historical events of 1726, 1776 and 1926, that have an interest because of the approaching meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, during the week of September 13, at which time, it is probable that the ASSOCIATION will order a mail vote to be taken for the selection of the site for the headquarters, in which provision is to be made for a museum of historical pharmacy. E. G. E.

EDITORIAL

E. G. EBERLE, EDITOR 10 West Chase St., BALTIMORE, MD.

THE FIFTH NATIONAL FORMULARY.

THE first general impression of the new National Formulary seems to be that it is "more like the Pharmacopœia than ever." While this may be true it was not the purpose of the revision or the aim of the Committee.

The aim of the Formulary is distinct from that of the Pharmacopœia, and has been kept so throughout the revision. The primary question in revision of the Pharmacopœia is "Why should this particular article be in the book?" and the answer is based upon its therapeutic value as judged by the physicians on the Committee. The primary question in National Formulary revision is "What preparations do the physicians wish to use?"—and no question is raised why they wish to use them. The National Formulary makes no dispute concerning the physician's therapeutic judgment. It recognizes his legal and ethical right to his own discriminating purpose, and merely aims to add the prestige of uniformity in composition and appearance and of pharmaceutical skill in compounding to the physician's desire. So while the two books may appear alike, there is a fundamental difference in their purpose which should be borne in mind.

The new Formulary does resemble the Pharmacopœia more than formerly in that it contains a number of tables which are new to it. These are included for two reasons: Some are needed to complete the data of Part I, and the tabular form seems to be more convenient and space-saving, and some are there because they are designed for the convenience of both the physician and the pharmacist. Whether the last will prove true is to be determined in the use of the book during the next few years. Is it easier, in looking up a dose or a solubility, to refer to a table, or to the individual article in either the U. S. P. or the N. F.? Perhaps habit is a large part of the answer to that, and the value of these tables will be determined very largely by the younger members of the profession, including students. Here is where innovations must begin and in a large measure must be judged.

The last table, that of component relations, is a truly new venture. It may prove helpful and it may prove to be more of a trap to entangle the student. It is hoped that the first only will be true. As a trap it certainly has no valid reason for existence. Furthermore, its accuracy is quite uncertain because, being new and also very inclusive, it demands more study than could be given during the revision to be sure that neither omissions nor mistakes are made.

The new book contains 151 more pages than its predecessor, and yet Part I, which is the foundation of the work, contains 35 less formulas. Logically it would appear that the book should be smaller, rather than larger. But four conditions have contributed to the increase in pages—first, the addition of dose statements to all preparations except those intended for external use; second, the addition of descriptions and tests to the Solutions and some other articles; third, the necessary increase of 25 articles in Part II over the number in the preceding edition, and fourth, the inclusion of diagnostic tests and tables in Part III.

Dose statements are a reincorporation. The first three editions of the Formulary contained partial dose statements, but these were not nearly as full as the present edition. The fourth edition contained none. The plan of the statements is open to question. Three plans are possible. One in which the doses are approximated in a way to be easily grasped and remembered. This plan has many advantages. Another plan is to give the actual equivalents in each dose by each system of weights and measures. The third is to give actual equivalents in one system, and approximate in the other. The second plan has been followed. Whether it is the wise one to adopt may depend upon the point of view. It is more accurate, but less usable. Teachers may approve of it and practitioners may not, or perhaps both may approve. It must be tried out before we can know which method is to be preferred, but no judgment is likely to be unanimous.

The descriptions and tests which have been added to the Solutions—and a few other preparations—are designed to be an added safeguard against errors or sophistication. This feature should be and doubtless will be extended in future editions, but it must be done very carefully. Both the descriptions and tests should be carefully checked up against a number of samples, to avoid errors in color or appearance due to normal variations in materials or individual skill in compounding, and also to supply reasonable tolerances for the tests. This will require the making of the preparations by a number of different operators, using different supplies or materials, and then the comparison of physical properties and chemical tests. It cannot be done in one revision. The present offers a basis for checking up on the descriptions and tests now given, and also for an enlargement of the subject for future revisions. Too minute descriptions or tests, based on a single or a very small number of samples, may be a detriment instead of a help.

Among the added preparations, the ampuls and tablets may be mentioned. Whether more than a very few pharmacists will make use of the formulas in the stores is doubtful, but the average pharmacist may derive a more definite idea of the standards and requirements in ampul and tablet preparation which will enable him to deal with these lines of medication more intelligently. The seven ampuls recognized are all typical of different classes, and except the iron ampul solutions, and the insoluble bodies which are offered in suspension in ampuls, they cover the general field.

There are a number of dental formulas which have been compiled by the aid of a special coöperation committee of dental teachers and practitioners appointed by the National Dental Association. These formulas include a toothpowder, dental liniments, a mouth wash and a toothache remedy—all, of course, having the approval of dental authorities. Before final adoption they were submitted to a number of dentists who were not on the committee, and their judgment was added thereto. They can, therefore, be offered as authoritative preparations for dental use, and the practice of local dentists be attracted thereto. This is another experimental development for the success of which future propaganda may be the key.

A few veterinary remedies are included in a similar way, adopted through the coöperation of a committee from the American Veterinary Medical Association. This committee coöperated very cordially, but it developed that there are but few distinctly veterinary preparations that would be suitable for inclusion. A number

of the present and past formulas are used in veterinary practice, but are not distinctly known as such. These are kept, and thus the only one which the Formulary recognizes as distinctly for veterinary use—the Veterinary White Lotion—while seemingly a small recognition is really one of a number of formulas which veterinarians use. Here is another opportunity for propaganda development. The N. F. Committee hopes that the next revision will see an increased interest in the Formulary, and a stronger desire to coöperate on the part of the allied medical organizations.—WILBUR L. SCOVILLE.

THE COMING MEETING IN PHILADELPHIA.

THE attention of the officers of the Sections of the AMERICAN PHARMACEUTICAL ASSOCIATION has been called to the rapidly approaching convention in Philadelphia. Steps should be taken immediately to prepare the programs of the Sections so that publicity may be given in the succeeding issues of the JOURNAL—only two issues are available for the purpose. The program must be prepared in advance of the meeting and every contributor desires that the titles of his or her paper be properly listed.

The session in Philadelphia promises to be one of the most important meetings in the history of the ASSOCIATION. A decision will probably be reached as to the vote on the Headquarters site. The contributions have been coming in very satisfactorily and there is reasonable hope that when the decision is reached as to site that endowments will be forthcoming which will enlarge the opportunities of the Headquarters. This hope is strengthened by the experiences of other promotions and the statement is prompted by a related result in the matter of the new $240,000 chemistry building for the University of Maryland, for the completion of which sum $30,000 was needed—the response came promptly from a few donors, who made up the required sum, and among these names that of the Chairman of the Headquarters Campaign Committee is included.

At last year's meeting of the National Conference on Pharmaceutical Research, Secretary John C. Krantz, Jr., brought up the question of publishing a book in popular style describing the research achievements of pharmacy. Progress has been made and the subject will, doubtless, have further consideration at the Philadelphia convention.

In the Preface of "Principles of Publicity," by Glenn C. Quiett and Ralph D. Casey, the authors say:

"The aims, ideals, activities, and accomplishments of many important groups in our complex modern society would go unrepresented in the forum of public opinion did not these groups themselves make an effort to popularize the causes and doctrines to which they are committed. To-day even a useful and honest opinion must make its appeal to the public in the face of other rival efforts to influence opinion, and it must therefore seek a hearing by availing itself of modern technical methods calculated to reach the mind of the average man. Many important causes would remain obscure and neglected if their supporters did not avail themselves of publicity to get the attention of the public."

This presents an argument for such a publication and the means which other professions have employed. It is especially applicable to pharmacy because the work of pharmacists has not infrequently been credited to related activities; reference to that has heretofore been made in these columns; the names of a few outstanding foreign examples are cited: Scheele, Sertürner, Pelletier, Caventou who, it is safe to say, are unknown as pharmacists to most of the laity.

The purpose of the comment is chiefly to point out some opportunities for work, and call attention that time passes quickly and the pharmaceutical dates of September will soon be days of to-morrow and yesterday.—E. G. E.

THE HEADQUARTERS AND GRADUATES IN PHARMACY.

TO THE credit of students of pharmacy it may be said that they realize their obligations to pharmacy, otherwise there would not have been so general a response by them to the call of the Headquarters Campaign Committee. The statement made by Wilfred Shaw several years ago relating to alumni may be applied to ASSOCIATION endeavors: "For the most part, as we view it to-day, the alumni support of our universities has been not only progressive but intelligent. It has brought new currents into many a university back water. In return we know that the campus, with its idealism and devotion to truth, wherever it may be found, has not been without its wholesome stimulus to those who having passed its portals, have returned once more for renewed inspiration."

The application is that the young men and women have been willing to share in the promotion of the profession chosen by them for life-work and the ASSOCIATION has extended them fellowship and endowed them with benefits that have come to it through the service and devotion of a lineage of pharmaceutical workers during nearly seventy-five years of associated endeavor. Within the AMERICAN PHARMACEUTICAL ASSOCIATION these young members will have the stimulating influences of faithful workers and the annual meetings will be a source of renewed inspiration.

It is to be hoped and, as these young men and women have exhibited their attachment for pharmacy, it may reasonably be expected that these contributors to the Headquarters will interest themselves in State Association work. They will find that through the workers within State organizations as well as the National bodies they are enabled to make a living, and maintain a desired standing in professional and business life. Pharmacists should have pride in their profession and their activities should recommend the profession to those served.

This comment is an appreciation of those who have exhibited the professional spirit and the willingness to be helpful—to share the responsibilities of pharmacy—and a welcome to them as associates to share whole-heartedly in the work of local state and national organizations of pharmacy.

Alumni represent an asset or liability to the institution in which they have been trained. Contact has an important part in learning, thinking and doing; in the success of individuals and in shaping the affairs of all professions and of business.—E. G. E.

NARCOTIC ADDICTION ON DECREASE.

THE U. S. Public Health Service, on the basis of investigations conducted by this department during the past two years, announces that there is a material decrease in the number of narcotic habitués in the United States as compared with former years. The report states that there is no absolutely authentic information obtainable as to the exact number of addicts, but as a result of the research the estimate is made that there are considerably less than 200,000 habitués at the present time, which is a considerable decrease from that of twelve years ago, and in marked contrast with estimates made by other agencies placing the number of addicts at a million or more. The report further states that many of those who used narcotics before the passage of the Harrison law have died or are dying off, with the result that the total is being greatly diminished.

One of the points brought out in the research is that 86 per cent of all cases of narcotic addicts examined discloses that they suffered with some form of nervous instability before they became addicts, and a large number of the remainder had taken the narcotics because of suffering from various ailments.

From a study of the intelligence of a hundred addicts, the conclusion is drawn that the low native intelligence is not of itself a cause of addiction, but that defective intelligence bears the same relation to narcotic addiction that it does to functional and nervous disorders. Efficiency of the law enforcement and general observance by pharmacists and physicians is indicated by the report.—E. G. E.

"OPIFERQUE PER ORBEM DICOR."

"And I am called a 'bringer of help' throughout the world."—Motto from English Apothecaries' Coat of Arms.

According to "Burke's Encyclopedia of Heraldry," the apothecaries' coat of arms is described as follows:

"In shield, Apollo, the inventor of physics, with his head radiant, holding in his left hand a bow, and in his right an arrow, supplanting a serpent. About the shield a helm, thereupon a mantle, and for a crest, upon a wreath of their colors a rhinoceros supported by two unicorns armed and ungulated. Upon a compartment, to make the achievement complete, this motto, 'opiferque per orbem dicor.'"—See PROCEEDINGS, AMERICAN PHARMACEUTICAL ASSOCIATION, vol. 16, p. 420 (1868).

SCIENTIFIC SECTION

THE MELTING POINT OF SODIUM PHOSPHATE U. S. P.*

BY H. F. HILDEBRANDT, R. E. SCHOETZOW AND P. M. GIESY.

Under "Sodii Phosphas" the U. S. P. has the statement, "When heated to about 40° C., the salt fuses yielding a colorless liquid." This statement leaves the impression that sodium phosphate has a melting point of 40° C. and that when it is heated no change takes place until this temperature is reached. Experience, however, does not bear this out. Sodium phosphate which has never been heated this high nevertheless undergoes caking and manufacturers frequently have complaints from customers because sodium phosphate which has not been heated to its "melting point" has caked. The reason for this lies in the fact that sodium phosphate dodekahydrate is not stable above 36° C.[1] At this temperature it undergoes transformation into a mixture of sodium phosphate heptahydrate and water, which dissolves a large proportion of the heptahydrate. As the temperature is further raised more and more of the heptahydrate goes into solution until at about 47° C. all of the heptahydrate has dissolved. The point 40° C., therefore, is not a true melting point at all but is merely the point at which the mixture of sodium phosphate heptahydrate and its solution in the water set free at 36° C. will flow. At temperatures between 36° and 47° C. a mixture of sodium phosphate heptahydrate and its saturated solution in water exists. When such a mixture is permitted to cool first, sodium phosphate heptahydrate crystallizes from the solution and finally this combines with the water to form a solid cake of sodium phosphate dodekahydrate. This caking will therefore occur whenever the salt is heated to a temperature of about 36° C. or higher and then permitted to cool.

Numerous experiments carried out in these laboratories have confirmed these facts. Packages of sodium phosphate U. S. P. were placed in an oven held at 102° to 105° F. In four and one-half hours all the packages had risen to a temperature of 94° to 95.5° F. After twenty-one hours in the oven the temperature was still the same. Only after forty-eight hours of continuous heating had the temperature of any of the packages risen above 95.5° F.

In another experiment a glass tube $1\frac{3}{4}''$ long by $\frac{3}{4}''$ in diameter was completely filled with sodium phosphate U. S. P. and closed with a rubber stopper through which passed a thermometer, the bulb of which was in the middle of the salt. This tube was then heated in a water-bath kept at a temperature 10° higher than the temperature of the sodium phosphate to approximate a uniform rate of heat transfer. At about 85° F. the salt contracted from the sides of the glass tube. At 95° F. a little of the salt liquefied and settled to the bottom of the tube, forming with the suspended crystals a heavy plastic mass. While the thermometer remained at 95° to 96° F. the remainder of the salt gradually settled likewise. At 110° F. there was about $\frac{1}{4}''$ of solution above a half-inch layer of still undissolved crystals. Figure 1 shows the time curve of the temperature of the salt. It will be noted that the break in temperature rise occurs at the transition point of 95° to

* Read before Scientific Section, A. PH. A., Des Moines meeting, 1926.

[1] Seidell ("Solubilities of Inorganic and Organic Compounds," Second Edition, p. 662 (1919)) gives figures of 35.2° and 36.45° C. for this transition point.

96° F., and that at 104° F. (40° C.) there is no break in the curve as there would have been had there been a melting point at this temperature.

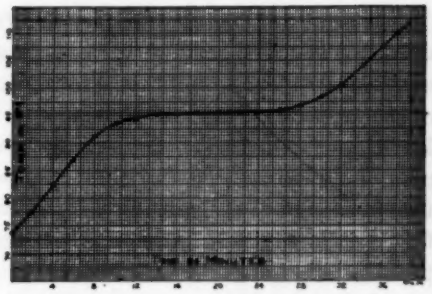


Fig. 1.

It is therefore obvious that the really significant temperature in this connection is about 36° C. (95° to 96° F.) where the transition from dodekahydrate to heptahydrate takes place. The temperature 40° C. (104° F.) is without significance.

It is not possible to prevent caking when sodium phosphate is subject to temperatures of over 35° C. unless sodium phosphate heptahydrate is substituted for the present U. S. P. material. Sodium phosphate heptahydrate is stable up to 48° C. (about 118° F.). This material is stronger than sodium phosphate U. S. P. as it contains 53% anhydrous sodium phosphate as against the present U. S. P. limits of 39.25 to 44%.

SUMMARY.

The "fusing point" of 40° C. given in the U. S. P. is without significance. Sodium phosphate will cake if heated above 35° C. The only way to prevent this is to market sodium phosphate heptahydrate which is stable up to 48° C.

LABORATORIES OF E. R. SQUIBB & SONS.

STRUCTURAL VARIATIONS IN ERYTHROXYLON LEAVES.

BY C. W. BALLARD.

(*Continued from p. 359, May* JOUR. A. PH. A.)

HISTOLOGICAL CHARACTERS OF ERYTHROXYLON LEAVES.

As noted in the section dealing with the morphology of several varieties of Erythroxylon, chief attention has been directed to the few species used as sources of cocaine. Comparative data is hardly available except in the form of brief notations in connection with the histological descriptions of the cocaine-yielding species. Necessarily the modifications due to environment must be apparent in histological structure and this part of the study was undertaken in the hope that the data accumulated might be of service in ascertaining the botanical identity of closely related species, or even varieties of the same species. With the constant multiplication of species or new names for slightly varying forms of the same species it is often a problem to decide whether or not the variations are sufficiently extensive to warrant the coining of new specific titles. Still more perplexing is the practice of considering these slight differences as variations and so naming them. Carried to the extreme this would result in each plant being a variety unto itself, for surely each has minor points of difference from others of the same species. While it is admitted that plants of a given genus, or even family, have certain histological characters common to all members, the points of variation in histological structure are, as a rule, just as apparent as the gross differences and perhaps more so. While modification in gross characters is necessarily accompanied by modification of minute structure it is questionable which occurs first.

It may well be remarked by the systematist that dependence upon leaf characters as a means of classification is faulty and this is admitted, but in pharmacognostical work one seldom receives flowering and fruiting specimens. The difficulties of securing flowering and fruiting specimens must also be taken into account and if leaf characters can be successfully used in paleobotanical classifications there appears no good reason why they cannot be used here. Again, it has been suggested that many of the Erythroxylons are dimorphic and perhaps trimorphic and this fact alone would bring leaf characters, as an aid to classification, into greater prominence than usual.

It is not to be expected that variants of the same species will not show resemblance in histological as well as gross characters but there appears the possibility of considering both gross and histological characters in dealing with so closely related forms as those of Eyrthroxylons. Where the morphological variations are very slight, histological characters might well be made more use of.

General Anatomical Characters of Erythroxylon (*Leaves*).—The leaves are bifacial; epidermal cells with straight to undulated lateral walls; stomata accompanied by subsidiary cells parallel to the pore; smaller vascular bundles of the veins accompanied by small amounts of sclerenchyma (*E. Coca*); gelatinized epidermal cells on the upper side of the leaf in many species; certain lower epidermal cells contain solitary calcium oxalate crystals (*E. Coca*), these cells being sometimes arranged in pairs; papillose differentiation of the lower epidermis is of frequent occurrence (*E. ovatum* and *E. subrotundum*); in *E. Bolivianum*, Burck, certain cells of the lacunar spongy tissue are sclerosed; typical sclerenchymatous ideoblasts, usually assuming the shape of a T, occur in *E. acutifolium*, *E. citrifolium*, *E. mucronatum* and *E. squamatum;* these ideoblasts traverse the palisade tissue and then continue their course between the latter and the epidermis; "sclerites rameuses" are also recorded in *E. Amplum*, *E. campestre*, *E. lucidum* and *E. suberosum;* cystolith-like bodies appear as small peg-shaped structures arising from the upper epidermal cells in *E. obtusum* (15).

Hartwich deduces the following characters as the result of a study of the general characters and histological structure of commercial coca leaves and several substitutes (3). This work is the only available reference wherein the histological characters of several species have been studied in detail and, although the number of species included is rather limited, it is an admirable presentation.

1. The leaves are of bilateral structure. 2. The midrib is prominent on the upper surface of all species studied excepting *E. obtusum*.
3. Meristele structure is variable.
4. Pericyclic fibers occur in all species studied excepting *E. campestre*.
5. Papillae occur only in *E. Coca*, *E. ovatum*, and *E. subrotundum*.
6. Stomata on the lower surface with two subsidiary cells.
7. Trichomes absent in all species studied. 8. Ideoblasts occur in *E. Coca*, *E. mucronatum*, *E. acutifolium*, *E. squamatum* and *E. citrifolium*.

Aside from these general characters Hartwich also notes that the best distinctions between Bolivian leaves (*E. Coca*, Lam.) and the others examined were the presence of strongly thickened but slightly lignified branched cells among the spongy parenchyma (termed ideoblasts by Hartwich) and also T-shaped ideoblasts, the arms being between the palisade and epidermal layers with the leg inserted in the palisade. Of these specific histological characters the first is perhaps the best, for while every specimen of *E. Coca* examined showed these branching cells, comparatively few showed the latter form of ideoblast, and this has also been the experience of Greenish (1).

Examination of *E. obtusum* confirms Hartwich's statement but the prominence on the upper side of the midrib was also lacking in *E. brevipes*, *E. minutifolium* and *E. alaternifolium*. It must also be borne in mind that the distinction between this midvein ridge and a slight thickening of the leaf in the midvein region is sometimes difficult to establish, especially when reduced to actual measurements. Thus one sample of Truxillo coca showed a midvein ridge of the same height as that occurring in Huanuco leaves despite the statement that this ridge is not as prominent in the former. Reference to Table 2, (in next issue) will show elevations in the midvein region ranging from 42 to 283 microns and a question arises whether the small elevations should be considered as ridges or mere local thickenings common in many leaves.

Pericyclic fibers were found to occur in the midvein structure in every species examined with the exception of a specimen marked *E. areolatum*.

In addition to the three species above named as showing papillae I find these structures present in the following species of Erythroxylon: *subracemosum*, *cumanense*, *Popayanense*, *areolatum*, *obovatum*, *Truxillense*, *carthagenense*, *Novagranatense* and *Spruceanum*.

Ideoblasts occurred in several of the species examined but they are not a constant character and were lacking in several specimens of *E. Coca* of undoubted authenticity.

The histological part of this study consisted in the examination of several specimens of various species of Erythroxylon divided as follows:

Erythroxylon	Coca, Lam.	4	specimens
"	Novagranatense, Mor.	2	"
"	Truxillense, Rusby	3	"
"	Spruceanum, Peyr.	1	"
"	carthagenense, Jacq.	1	"
"	subracemosum, Turcz	1	"
"	pauciflorum, Rusby	2	"
"	Bangii, Rusby	2	"
"	cumanense, H. B. & K.	1	"
"	Popayanense, H. B. & K.	2	"
"	areolatum, Linn.	4	"
"	anguifugum, Mart.	7	"
"	brevipes, DC.	2	"
"	Urbanii, O. E. Schulz	1	"
"	havanense, Jacq.	2	"
"	minutifolium, Griseb.	1	"
"	alaternifolium, A. Rich	1	"
"	obovatum, Macfad.	2	"
"	Pelletierianum, A. St. Hil.	1	"
"	nitidum, Spreng	1	"
"	Columbianum, Mart.	1	"
"	orinocense, H. B. & K.	1	"
"	unidentified or uncertain	5	"

These materials were selected from specimens used in determining the gross characters of the leaves and in many instances represent type specimens. While the objections to basing descriptions and comments upon the examination of limited amounts of material are fully realized, it must be borne in mind that in work of this sort it is impossible to obtain large specimens. Many of these species are

not commercial articles and herbarium material is limited. Undoubtedly similar conditions would be encountered in a histological study of many of the more common genera occurring naturally in this vicinity. If we are to be deterred from comparative studies because large amounts of material are not at hand we immediately check or greatly limit this field of research. But even though the amount of material be limited, if it is possible to obtain specimens from different sources and find that they agree in structural characters this at least should serve to combat the danger of drawing false conclusions. In a few instances but a single leaf was available and it has been thought more advisable to complete the study, even with this small amount of material, than to accept the alternative of passing it over entirely.

Sections were made by the usual methods and cut from 20 to 40 microns in thickness. As far as possible the material for sectioning was taken from the middle portion of the leaf. In studies of the arrangement of midrib tissues this is especially

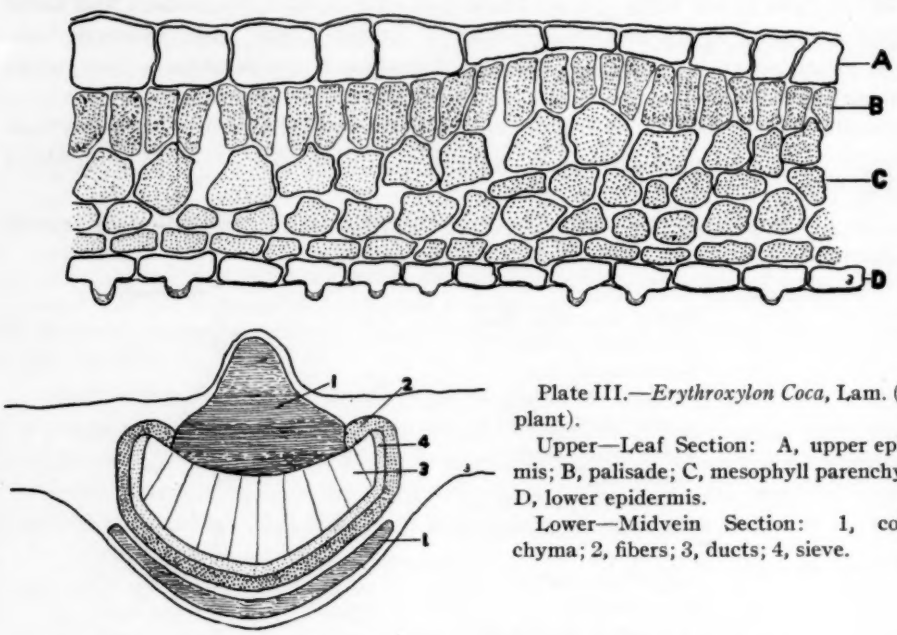


Plate III.—*Erythroxylon Coca*, Lam. (wild plant).

Upper—Leaf Section: A, upper epidermis; B, palisade; C, mesophyll parenchyma; D, lower epidermis.

Lower—Midvein Section: 1, collenchyma; 2, fibers; 3, ducts; 4, sieve.

important, as Greenish (1) has called attention to the fact that the arrangement of these tissues varies in different regions of the leaf and criticizes the conclusions of Hartwich based upon the form of the xylem. The illustrations showing transverse sections of the different leaves are all drawn to the same scale and at a magnification of 375 diameters. The illustrations showing the arrangement of tissues in and about the midrib are also drawn to a definite scale but owing to space limitations this is rather smaller than that used for the leaf sections. These midrib illustrations are semidiagrammatic and an effort has been made to show the comparative amounts of each tissue as well as the arrangement. The magnification of these midrib sketches is 100 diameters, excepting where otherwise noted. Cell contents (as chloroplastids and crystals) have been purposely omitted in the illustrations and the shading is indicative of depth of coloration in the different specimens.

Erythroxylon Coca, Lam. (*Wild Growing*).—(Plate III.) Sections of this leaf average 126 microns in thickness. The upper epidermal cells are variable, especially in height, ranging in form from nearly square to tangentially elongated and bearing a moderately thick cuticle on the free surface. These size differences appear to be due to a pushing outward of the palisade layer by the fibrous tissue of the veinlets. Cells of the lower epidermis are one-half to two-thirds the size of those of the upper epidermis and many bear prominent papillae with a thickened apical portion. Palisade cells are nearly uniform in height but variable in form and contain a brownish green material. Two to three of these cells abut on each epidermal cell. Mesophyll parenchyma is not very extensive, comprises three to five layers of cells, is rather compact and lacking in large aerating chambers. Crystalline calcium oxalate occurs in moderate amounts in addition to a brownish green content.

The primary branch veins are surrounded by a heavy fibrous sheath which appears to force a portion of the palisade outward and the epidermal cells in the vicinity of the veins are reduced in size to make way for the palisade which has been so displaced.

A distinct ridge appears above the midvein on the upper surface of the leaf. This ridge is of the same type as in *E. Coca* but not as extensive. Collenchyma occurs within the ridge and extends inward to the duct region. A narrow band of collenchyma also occurs between the lower epidermis and the fiber zone, although separated from the latter by a thin layer of parenchyma. Fibrous tissue extends but part way around the vascular elements and is lacking on the upper side of the midvein, at which point the collenchyma adjoins the ducts. The sieve region is well marked and extends around the ends of the duct zone. The ducts occur in double rows with a strip of parenchyma intervening and a small amount of the latter tissue is present on the upper face of the duct zone.

A second specimen of this material, collected by Dr. Rusby in a different locality, was found to agree excepting as regards thickness of leaf, which averaged 157 microns, and in midvein characters. The fibrous tissues completely surround the vascular elements and the sieve is located only on the lower side of the duct zone.

Erythroxylon Coca, Lam. (*Cultivated*).—(Plate IV.) Leaves from four specimens of this species range from 120 to 180 microns in thickness. The upper epidermis is a single layer of nearly rectangular cells, the outer surface being rather strongly cutinized. The lower epidermal cells bear large papillae with thick-walled apical portions. The cells of the lower epidermis, including the projecting papillae, are about equal in size with those of the upper epidermis. Palisade consists of a single layer of slightly irregular cells, approximately three times longer than broad and filled with chlorophyll. The number of palisade cells abutting on each epidermal cell varies from two to three. Mesophyll parenchyma is arranged in five to eight layers of cells ranging in form from isodiametric to elongated rectangular containing chlorophyll and numerous prismatic calcium oxalate crystals. Large aerating chambers occur in this region. Many of the fibrous elements are irregularly branched and with white thick walls.

Primary veins are placed more toward the upper side of the leaf and the fibrous elements surrounding them penetrate the palisade and extend to the upper epider-

mal layer, which is slightly raised above the vein. There are one or two layers of mesophyll parenchyma between the vein and the lower epidermis. The areolae or lateral lines are marked by pads of collenchyma occurring within the lower epidermis at these points.

The midvein ridge on the upper leaf surface is well developed and consists of a mass of slightly collenchymatized cells which interrupt the palisade and extend inward to the duct region. Collenchyma also occurs in contact with the lower epidermis but is separated from the fiber zone by a layer of elongated thin-walled parenchyma and two or three layers of isodiametric parenchyma. The pericyclic fibers extend around the vascular elements with the exception of the middle portion of the upper side of the duct zone which is in contact with collenchyma. The amount of fibrous tissue is rather smaller than in other species and the ducts are more irregularly disposed, the sieve projecting into the duct zone at several points.

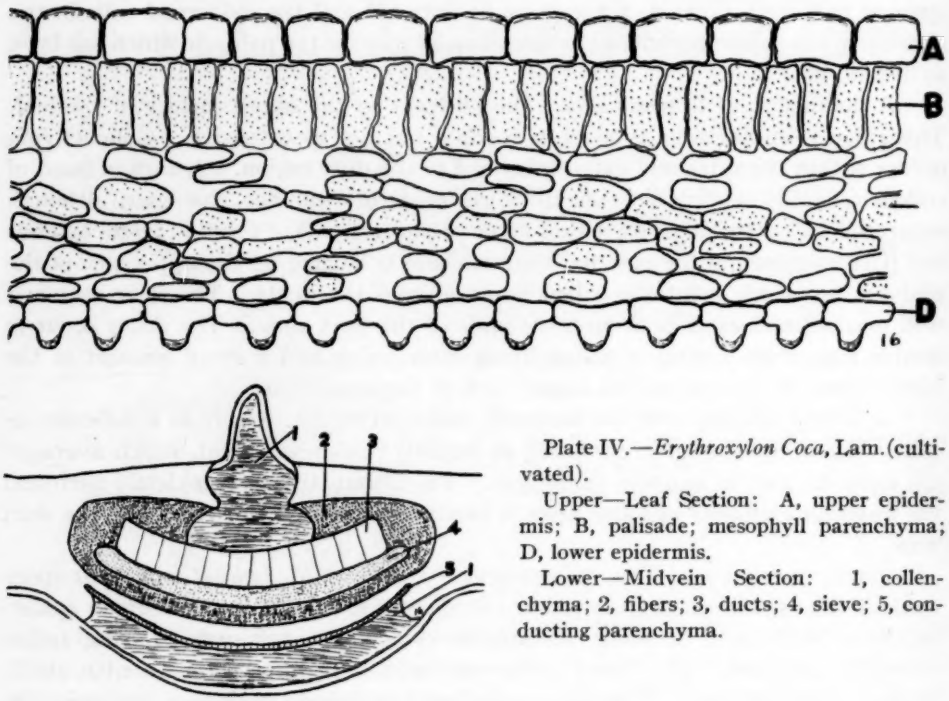


Plate IV.—*Erythroxylon Coca*, Lam. (cultivated).

Upper—Leaf Section: A, upper epidermis; B, palisade; mesophyll parenchyma; D, lower epidermis.

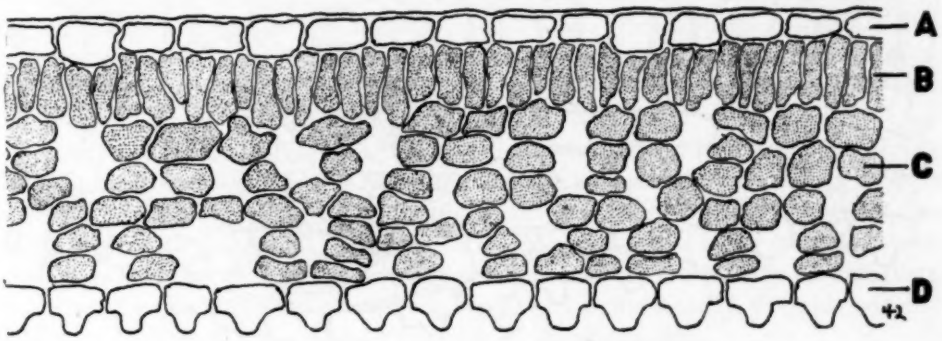
Lower—Midvein Section: 1, collenchyma; 2, fibers; 3, ducts; 4, sieve; 5, conducting parenchyma.

Hartwich (3) illustrates the general arrangement of the fibrous elements, sieve and ducts of the midvein. This illustration does not include the collenchyma but is substantially identical with Plate IV.

The illustrations of Bolivian Coca appearing in *Pharm. Jour. and Trans.* p. 485, (May 27, 1899), are very similar to Plate IV, thus supporting Rusby's view (14) that *E. Coca* var. *Bolivianum*, Burck, is identical with *E. Coca*, Lam.

Erythroxylon Novagranatense, Mor.—(Plate V.) Sections of this specimen show considerable variation in thickness, ranging from 84 to 147 microns. The cells of the upper epidermis are slightly variable as regards height, some appearing

but one-half the size of others, are nearly uniform in length and but slightly elongated. A thin cuticle is present on the free surface. Lower epidermal cells are somewhat larger and bear prominent papillae, with slightly thickened apical portions. The palisade layer is thinner than in other leaves of the same thickness and the cells vary in size and shape. These variations are but partly due to the difference in size of the overlying epidermal cells. Chloroplasts in a fair state of preservation fill the palisade cells and the number of the latter in contact with each epidermal cell ranges from two to four. The proportion of height to width is two or three to one. Mesophyll parenchyma consists of five to seven layers of cells surrounding large aerating chambers. The uppermost layer is of the collecting or funnel type and the lower layers are flattened. Prismatic calcium oxalate occurs freely. Small numbers of branched but non-thickened cells also occur in this region.



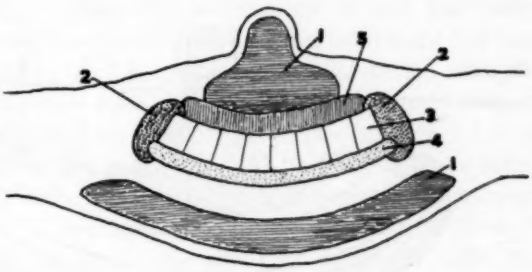


Plate V.—*Erythroxylon Novogranatense*, Mor.

Upper—Leaf Section: A, upper epidermis; B, palisade; C, mesophyll parenchyma; D, lower epidermis.

Lower—Midvein Section: 1, collenchyma; 2, fibers; 3, ducts; 4, sieve; 5, conducting parenchyma.

The fibrous tissue of the primary vein branches partially displaces the palisade at points of occurrence and the entire leaf blade shows a slight thickening in the vicinity of these veins. This fibrous sheath is separated from the lower epidermis by one or two layers of parenchyma.

The crest over the midvein on the upper surface of the leaf varies in height and is more prominent in the thinner specimens. There is a gradual thickening of the midpart of the leaf leading up to the crest which rises above the surface of midvein. The collenchyma of the midrib region is greatly increased and fibrous elements are correspondingly reduced. Collenchyma occurs both within the crest and as a broad band between the midvein and the lower epidermis, although parenchyma intervenes between this tissue and the sieve. The sieve zone is rather larger than in other species and the usual surrounding sheath of fibrous elements is lacking. Distinct fibers are only apparent at the sides of the vascular elements. Ducts are large,

with thicker walls than usual and with very little conducting parenchyma between them, the bulk of the latter tissue being massed on the side of the duct zone toward the upper epidermis.

The midvein tissues as pictured by Hartwich (3) for this species are quite different from those shown in Plate V. His illustration does not show collenchymatic zones and conducting parenchyma. The fibrous tissues are shown as almost completely surrounding the vascular elements, similar to the arrangement in *E. Coca*, and in fact the chief difference between his illustration of *E. Coca* and *E. Novogranatense* is the lack of a midvein ridge in the latter. In my specimen of this species I find a distinct ridge, although smaller than that in *E. Coca*.

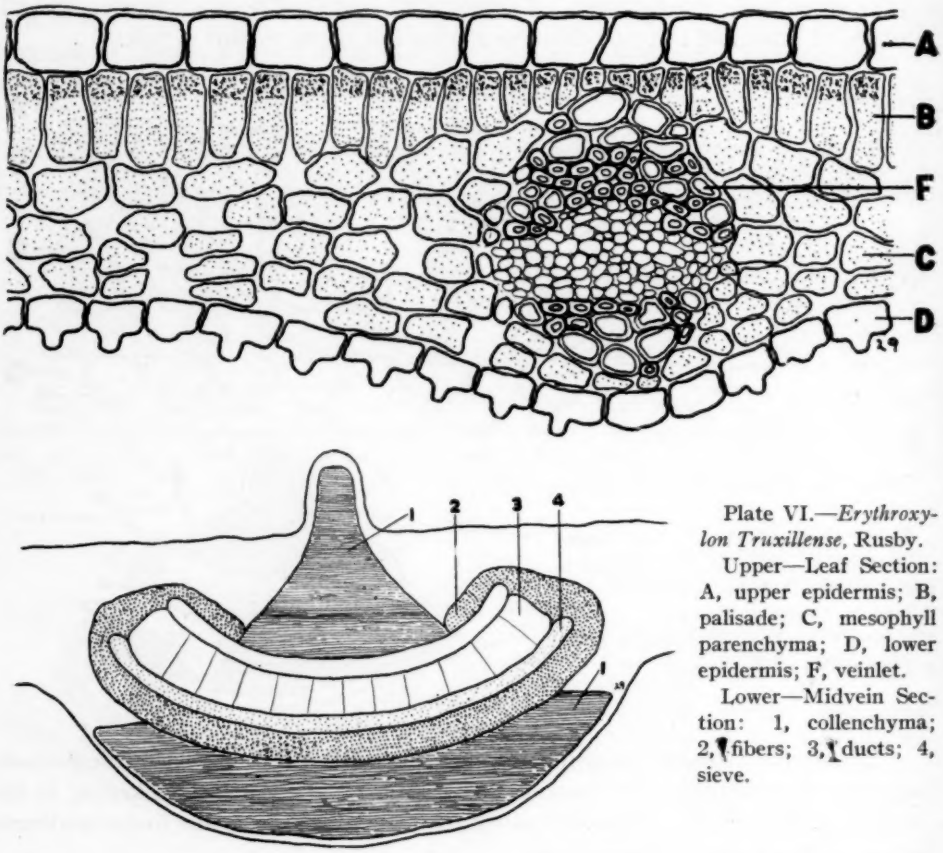


Plate VI.—*Erythroxylon Truxillense*, Rusby.
Upper—Leaf Section: A, upper epidermis; B, palisade; C, mesophyll parenchyma; D, lower epidermis; F, veinlet.
Lower—Midvein Section: 1, collenchyma; 2, fibers; 3, ducts; 4, sieve.

Erythroxylon Truxillense, Rusby.—(Plate VI.) Specimens of this species range from 100 to 138 microns in thickness. The upper epidermis consists of a single layer of cells, varying in form from tangentially elongated to nearly square, and bearing a thin cuticle on the free surface. The cells of the lower epidermis are almost the same size as those of the upper and bear well developed papillae which are rather broader than those of other species. Palisade cells are uniform in height and the proportion of height to width is about 3 to 1. The chlorophyll appears to have accumulated in the portion in contact with the epidermis. Mesophyll parenchyma consists of three to six layers of cells. The upper layers of parenchyma

cells are of flattened form while the others are isodiametric. Prismatic calcium oxalate is very abundant and many of the cells retain their chloroplasts in a good state of preservation. Large aerating chambers occur, especially toward the lower side of the leaf.

Primary branch veins occupy nearly the entire space between lower and upper epidermal layers, extending through the palisade on one side and in many instances to the lower epidermis on the other. While in other species these primary veins are massive it is seldom that they are so extensive.

The midvein ridge shows considerable variation in height above the general leaf surface, averaging about 75 microns. The tissue within the ridge is collenchyma and this tissue extends inward to the midvein bundle. A broad area between the lower side of the bundle and the lower epidermis also consists of collenchyma which apparently replaces, at least in part, the fibrous tissue occurring in the corresponding location in most species. While fibrous tissue surrounds the vascular elements it is poorly developed, being greatest in amount at the sides of the bundle. Sieve occurs below the ducts, but there is an area on the upper side of the bundle which has every appearance of being a secondary sieve zone.

Plate VI, showing the arrangement of tissues in the midrib region of Peruvian coca, differs from the illustration in *Pharm. Jour. and Trans.*, p. 485 (May 27, 1899), in that a distinct crest appears in my specimens of Truxillo leaves. According to Holmes (2) Peruvian and Truxillo cocas are identical, both being from *E. Novagranatense* and the latter having little sign of a midvein crest. My observations would confirm the latter part of his statement but would conflict with his conclusion that Truxillo leaves are identical with *E. Novagranatense.*

Erythroxylon Spruceanum, Peyr.—(Plate VII.) Sections of this leaf range from 115 to 190 microns in thickness, the variations resulting from local thickenings due to the presence of large amounts of fibrous tissue in connection with the veins. The epidermis consists of a single layer of tangentially elongated cells of approximately even size and bearing a thin cuticle on the free surface. Lower epidermal cells bear very large thick-walled papillae. The palisade cells are somewhat irregular as regards form and size and this layer is frequently interrupted by the fibrous sheaths of the veins. Three palisade cells are in contact with each epidermal cell. Mesophyll parenchyma occurs in about six layers of cells, the lower layers being slightly flattened and enclosing small aerating chambers. A brownish content occurs in both palisade and mesophyll parenchyma cells. Prismatic calcium oxalate occurs rather sparingly. Branched thick-walled fibrous elements are found scattered amongst the mesophyll parenchyma cells.

The fibrous sheaths surrounding the veins in this leaf show a greater degree of development than in any of the other species examined. This fibrous tissue not only displaces the palisade but also causes an elevation of the epidermal surface at the points of occurrence. In the case of primary branch veins, the fibrous and vascular tissues occupy the entire area between upper and lower epidermis.

The midvein region shows but little sign of a ridge or crest on the upper surface. Narrow zones of partially collenchymatized cells occur on both upper and lower sides of the midvein. Fibrous tissue encircles the vascular elements with the exception of a small area on the upper side of the ducts which is occupied by conducting parenchyma. In addition to the main sieve region on the lower side

of the ducts two smaller zones appear within the fibrous tissue on the upper side of the duct region.

The Hartwich illustration (3) of the midvein tissues of this species differs from Plate VII in that the fiber zone is shown as extending but part way around the sides of the vascular elements. Collenchymatic tissue, conducting parenchyma and the small secondary sieve groups on the upper side of the ducts are not shown in this figure. The elevation over the midvein appears similar to that in Plate VII.

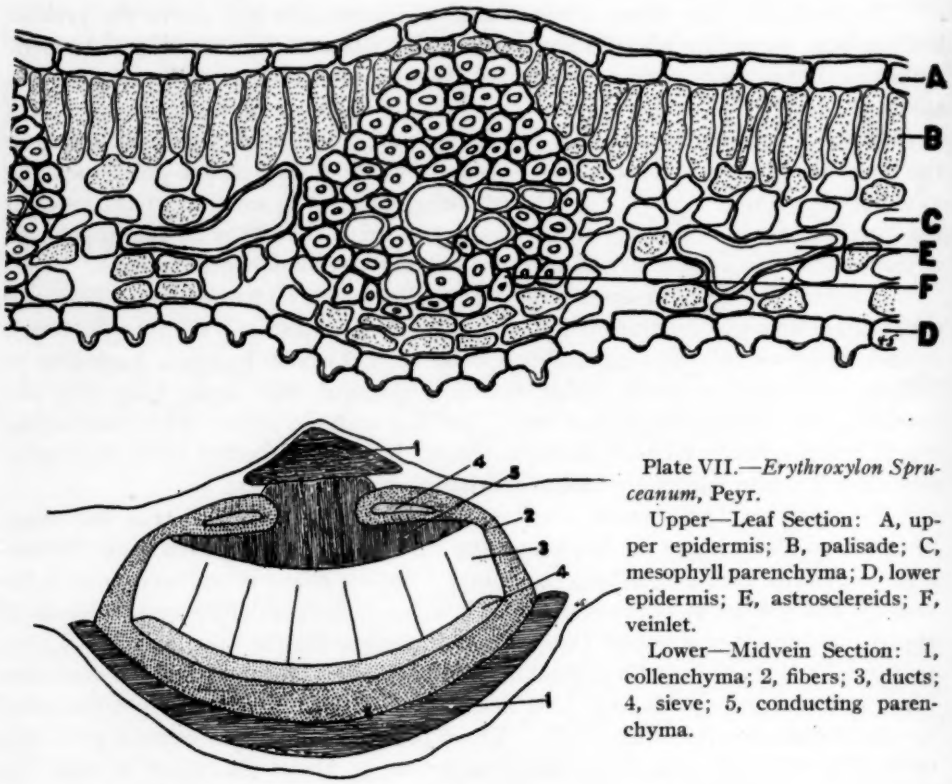


Plate VII.—*Erythroxylon Sprucеanum*, Peyr.

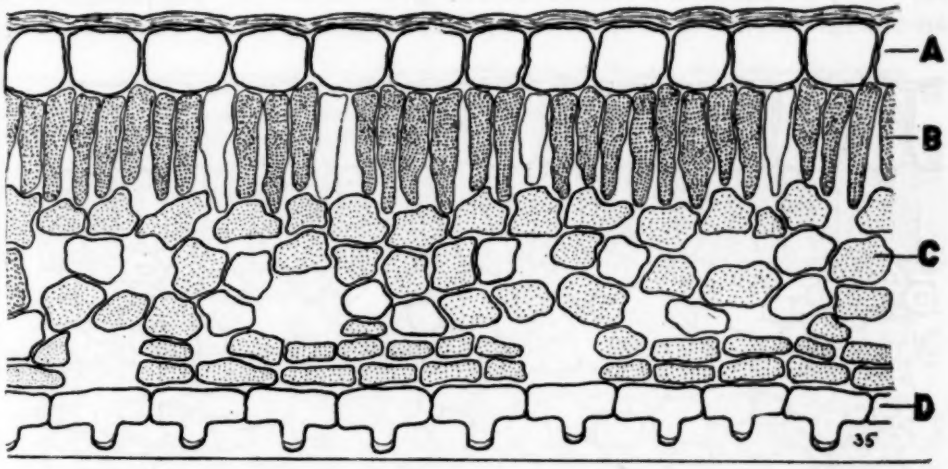
Upper—Leaf Section: A, upper epidermis; B, palisade; C, mesophyll parenchyma; D, lower epidermis; E, astrosclereids; F, veinlet.

Lower—Midvein Section: 1, collenchyma; 2, fibers; 3, ducts; 4, sieve; 5, conducting parenchyma.

Erythroxylon carthagenense, Jacq.—(Plate VIII.) This leaf is comparatively thick, sections averaging 230 microns. The upper epidermis is a single layer of large, nearly square cells, bearing a thick cuticle on the exposed surface. The inner walls of these cells are but slightly convex and the outer ends of the palisade cells are nearly straight. Cells of the lower epidermis are large and bear large papillae with extremely thick walls. Palisade consists of radially elongated cells many of which taper toward the mesophyll parenchyma, thus leaving spaces of varying sizes between the individual cells. Many of the palisade cells are filled with brown content while others appear clear. The proportion of height to width averages five to one and two to four palisade cells underlie each epidermal cell. Mesophyll parenchyma consists of four to six layers of various types of cells. The uppermost layer consists of funnel or collecting cells adjoining the palisade. The lowermost layers are flattened while those in between are irregular. A brownish

content similar to that noted in the palisade occurs in many of these cells and, owing to large aerating chambers, the entire texture is loose. Prismatic calcium oxalate and large chloroplastids in a fair state of preservation are apparent in the parenchyma cells.

Fibrovascular bundles representing the primary veins are placed toward the upper surface of the leaf and the fibrous tissue displaces the palisade. Two or three layers of parenchyma intervene between the lower side of the vein bundle and the lower epidermis.



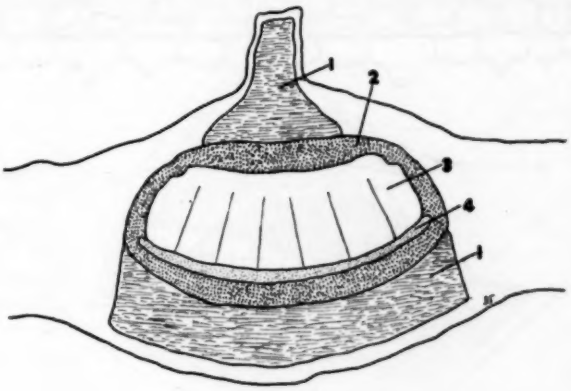


Plate VIII.—*Erythroxylon carthagenense*, Jacq.

Upper—Leaf Section: A, upper epidermis; B, palisade; C, mesophyll parenchyma; D, lower epidermis.

Lower—Midvein Section: I, collenchyma; 2, fibers; 3, ducts; 4, sieve.

A distinct ridge appears on the upper leaf surface above the midvein but the summit of the ridge is a flat surface and not rounded as in the majority of species. Collenchyma occupies the interior of the ridge and extends inward to the fibrous layer. A broad band of collenchyma is also located between the lower epidermis and the lower layer of fibrous tissue. Besides the thickened white walls, typical of collenchymatic tissue, these cells contain a brown content similar to that occurring in the palisade and the mesophyll parenchyma. Pericyclic fibers completely encircle the vascular portions, being greatest in number on the upper side. Sieve cells are filled with brown content. Ducts are arranged in radiating rows

separated from each other by one or two layers of porous or woody parenchyma cells, and this tissue is continued as a zone on the upper surface of the ducts.

Erythroxylon subracemosum, Turcz.—(Plate IX.) Sections of this leaf average 230 microns in thickness. The upper epidermis consists of a single layer of large rectangular cells fairly symmetrical as regards form and with the free surfaces thickened to form a cuticular covering for the leaf. The cells of the lower epidermis are about one-third the depth of those of the upper epidermis, showing rather scattered papillae and a light brown coloration which in several instances extends into the papilla. No evidence of a distinct cuticular layer is apparent. The palisade cells are of a light brown color but chromatophores are not apparent. The cells of this

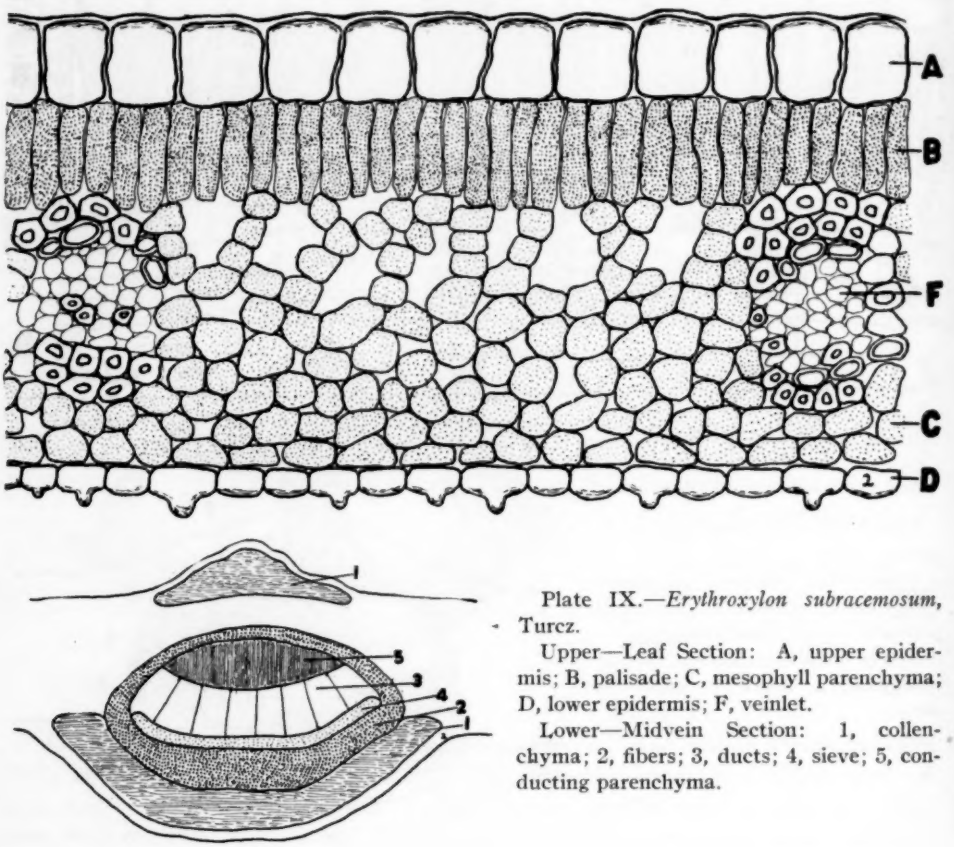


Plate IX.—*Erythroxylon subracemosum*, Turcz.

Upper—Leaf Section: A, upper epidermis; B, palisade; C, mesophyll parenchyma; D, lower epidermis; F, veinlet.

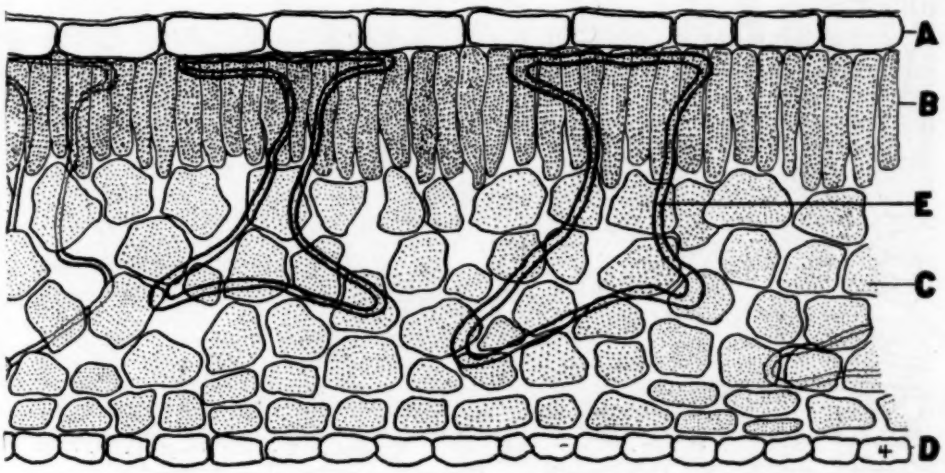
Lower—Midvein Section: 1, collenchyma; 2, fibers; 3, ducts; 4, sieve; 5, conducting parenchyma.

region are of the usual radially elongated type, the average ratio of length to width being four to one. The number of palisade cells abutting on an epidermal cell ranges from two to four. The mesophyll consists of five to nine layers of parenchyma cells of a light brown color, many of which contain prismatic crystals of calcium oxalate. Viewed in surface preparations the lowermost layers of mesophyll cells appear as branching or interlacing forms. The fibers ramifying in this loose parenchyma may assume slightly branched form.

The fibrovascular bundles representing the primary vein branches are placed

more toward the upper leaf surface and partially displace the palisade tissue where they occur.

The midvein shows but little evidence of the ridge so marked in several species of Erythroxylon. While sections show a thickening of the leaf on the upper as well as the lower side of the midvein, this thickening is hardly greater than that occurring in the leaves of many other plants. The sieve portion of the fibrovascular bundle is a thin zone of light brown cells with two to four layers of lignified cells on the lower surface. These fibers extend around the ends of the duct region and appear in reduced amount toward the upper surface of the latter. Thus the entire midvein is encircled by fibers. The ducts occur in irregular radiating lines



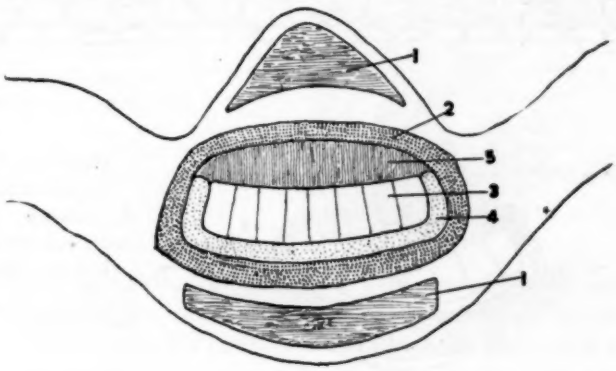


Plate X.—*Erythroxylon pauciflorum*, Rusby.

Upper—Leaf Section: A, upper epidermis; B, palisade; C, mesophyll parenchyma; D, lower epidermis; E, astrosclereids.

Lower—Midvein Section: 1, collenchyma; 2, fibers; 3, ducts; 4, sieve; 5, conducting parenchyma. (200x.)

interspersed with fibers and gradually giving way to larger parenchymatic cells toward the upper side of the leaf. A broad collenchyma zone occurs between the lower epidermis and the fiber zone, and a small area of collenchyma is present immediately within the upper epidermis.

Erythroxylon pauciflorum, Rusby.—(Plate X.) Two specimens of this species were examined and sections of the leaf averaged 195 microns in thickness. The upper epidermis consists of a single layer of tangentially elongated cells, the length being two to four times the height, with a thin cuticle on the free surface. The lower

epidermal cells are entirely devoid of papillae and are about one-half the length of those of the upper epidermis. Prismatic crystals of calcium oxalate occasionally occur within the lower epidermal cells. The palisade cells are brownish in color, the outer half of each cell being deeper in color than the portion in contact with the mesophyll parenchyma. The cells of the palisade region are four to five times longer than broad and rather irregular in form. The number of palisade cells abutting on an epidermal cell averages four. At certain points the palisade tissue is interrupted by astrosclereids of the buttress type, which are in contact with the upper

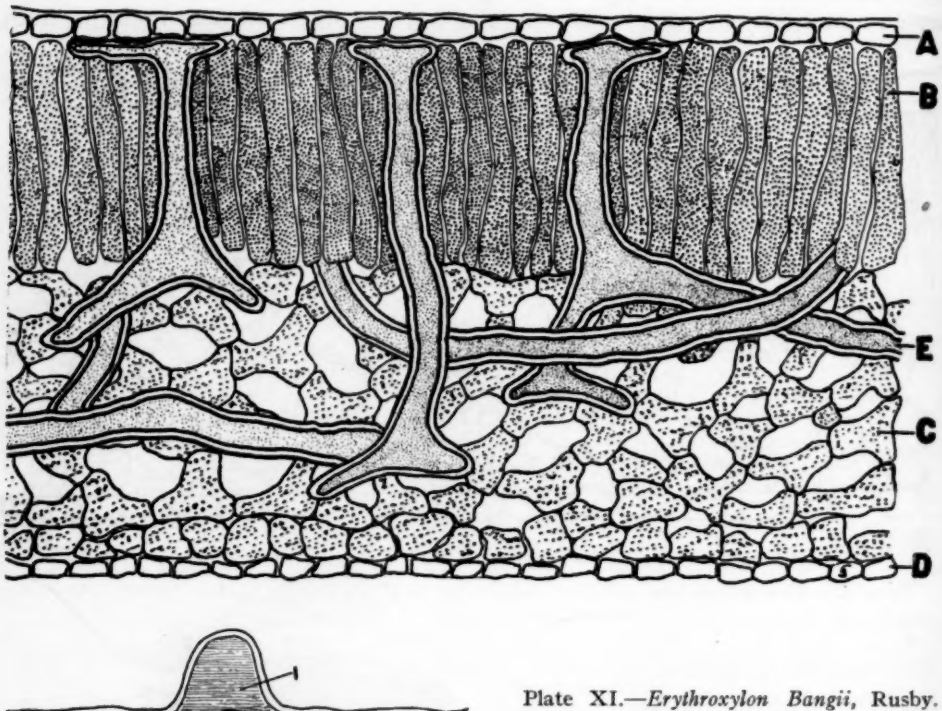


Plate XI.—*Erythroxylon Bangii*, Rusby.
Upper—Leaf Section: A, upper epidermis; B, palisade; C, mesophyll parenchyma; D, lower epidermis; E, astrosclereids.
Lower—Midvein Section: 1, collenchyma; 2, fibers; 3, ducts; 4, sieve; 5, conducting parenchyma. (200x).

epidermis by a flat surface and which extend well into the mesophyll parenchyma. The mesophyll parenchyma consists of five to six layers of cells, nearly devoid of coloration, and in many instances containing prismatic calcium oxalate crystals. Branched sclerenchymatic elements ramify amongst the parenchyma cells.

The fibrovascular bundles representing the primary vein branches are centrally located and the palisade at the points of occurrence is but slightly reduced.

The upper leaf surface shows a fairly pronounced ridge over the midvein. Within both upper and lower epidermal layers is a zone of collenchymatic tissue.

The pericyclic fibers extend in an unbroken layer around the vascular portions of the midvein and the fiber zone is equally thick at all points. The sieve zone is brownish in color and about equal in thickness to the duct region. The circle of pericyclic fibers also encloses a large parenchyma zone placed toward the upper side of the leaf.

Erythroxylon Bangii, Rusby.—(Plate XI.) Sections of this leaf average 280 microns in thickness. The upper epidermis is a single layer of comparatively small rectangular cells, the free surface bearing a thin cuticle. Both upper and lower epidermal layers are much thinner than the corresponding tissues in the other leaves examined and comprise but one-thirteenth to one-sixteenth the entire thickness of the leaf, this proportion being smaller than in any other specimen. Papillae do not occur upon the lower epidermal cells. The length of the palisade cells is about eight times the width and they are extremely irregular in form, not more

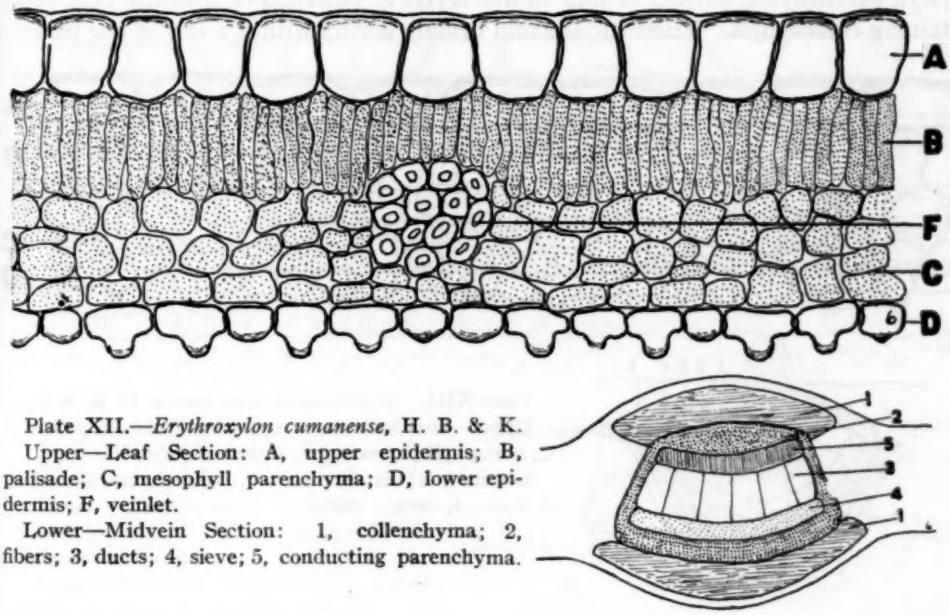


Plate XII.—*Erythroxylon cumanense*, H. B. & K. Upper—Leaf Section: A, upper epidermis; B, palisade; C, mesophyll parenchyma; D, lower epidermis; F, veinlet.

Lower—Midvein Section: 1, collenchyma; 2, fibers; 3, ducts; 4, sieve; 5, conducting parenchyma.

than two abutting on each epidermal cell. The buttress type astrosclereids are very prominent in this species, being larger and more extensive in branching than in any other species examined. These sclereids penetrate the palisade, presenting a flat surface in contact with the upper epidermis and extending deeply into the mesophyll parenchyma, an arrangement similar to that in *E. Coca*. The mesophyll parenchyma consists of six to eight layers of branching cells with brown contents. Comparatively few calcium oxalate crystals are present in the specimen.

The fibrovascular tissue of the primary veins is located centrally and thus does not materially reduce the depth of the palisade layer.

The ridge on the upper leaf surface over the midvein is very pronounced, being even more prominent than in *E. Coca*. The ridge is a mass of collenchymatic tissue and several layers of this tissue are placed on each side of the vascular strand which is completely surrounded by fibers. The fibrous tissue is greatest in amount

on the upper side of the bundle and immediately beneath the ridge. The sieve region extends part way around the xylem and is light colored. A mass of collenchyma appears on the upper surface of the xylem.

Erythroxylon cumanense, H. B. & K.—(Plate XII.) The sections of this leaf average 160 microns in thickness. The upper epidermis is very thick, averaging about one-fourth the thickness of the entire leaf and consisting of a single layer of large rectangular cells, the outer surfaces being covered with a moderately thick cuticle. The lower epidermal cells bear prominent papillae which in many instances contain greenish contents, and the wall of the papilla is of even thickness throughout. The palisade cells are very regular in arrangement and uniform in size, being about five times longer than wide. Five or six palisade cells abut on each epidermal cell. The inner wall of the upper epidermal cells is convex and there is a slight variation in length of palisade cells to meet this irregularity. The mesophyll parenchyma consists of four to five layers of flattened or irregular cells containing chlorophyll. Prismatic calcium oxalate occurs within a few of the paren-

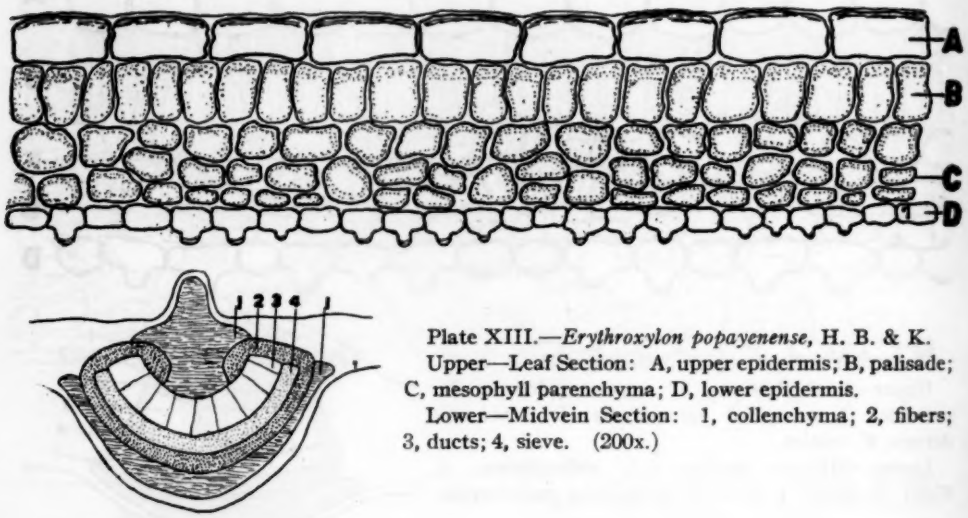


Plate XIII.—*Erythroxylon popayenense*, H. B. & K.
Upper—Leaf Section: A, upper epidermis; B, palisade; C, mesophyll parenchyma; D, lower epidermis.
Lower—Midvein Section: 1, collenchyma; 2, fibers; 3, ducts; 4, sieve. (200x.)

chyma cells but a greater amount occurs in connection with the fibrous tissue of this region. The lower layers of parenchyma consist of branching cells which appear circular in sectional view and resemble the "tube cells" in cereals.

Although the primary veins are located centrally, they are so abundantly provided with fibrous tissue and the upper epidermis occupies so much of the total area of the leaf, that both palisade and upper epidermis are reduced in size in the vicinity of these structures.

The midvein region of the leaf is about twice the thickness of the lamina but no ridge occurs on the upper surface. Collenchyma occurs in greatest amount on the lower side of the midvein bundle, being almost lacking on the upper surface. Pericyclic fibers encircle the vascular tissues, being greatest in amount on the upper surface. Sieve and duct tissues are about equal in amount, with a small mass of collenchyma placed between the upper side of the duct group and the fibrous zone.

Erythroxylon Popayenense, H. B. & K.—(Plate XIII.) Sections of this leaf

range from 105 to 160 microns in thickness. The upper epidermis is about one-fifth the thickness of the entire leaf, the cells appearing elongated rectangular in sectional view, with the outer surface thickly cutinized. Papillae with extremely thick walls and a greenish content are prominent on the lower surface of the leaf. The palisade cells are broad, being almost as wide as long, and of light green color. Two or three palisade cells abut on each epidermal cell. The mesophyll parenchyma consists of but a few layers of isodiametric to irregular cells of light color in which crystals occur but sparingly. Many of the fibers in this region are decidedly branched.

Owing to the fact that the leaf blade is rather thin and the primary veins of large size, the leaf is thickened at the points of occurrence of these veins and the palisade layer is much reduced in thickness.

The midvein ridge is fairly prominent although not very large. Collenchyma occurs within the ridge and also in a narrow band between the fiber zone and the

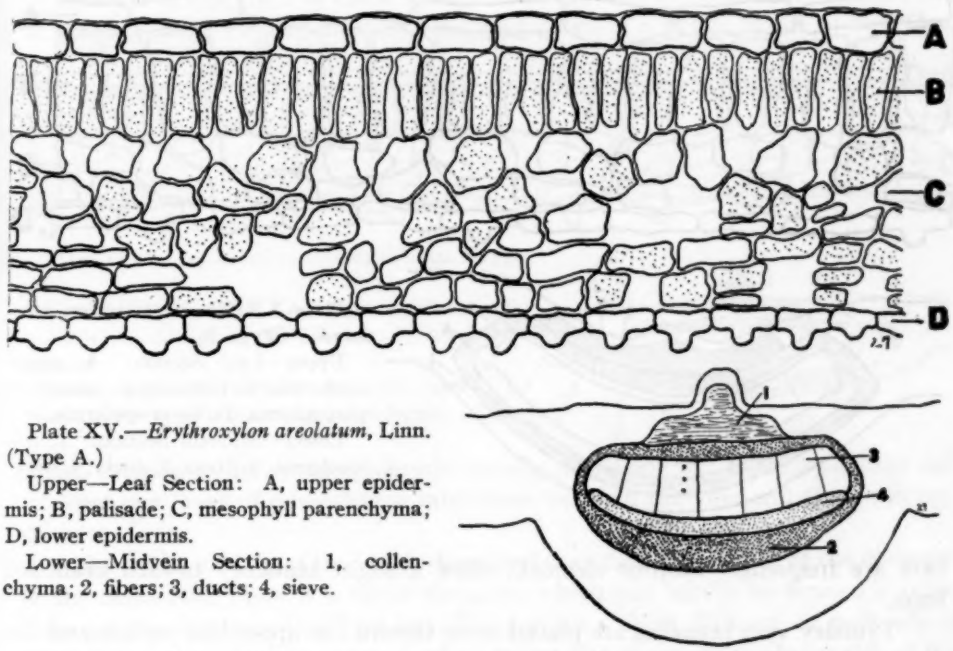


Plate XV.—*Erythroxylon areolatum*, Linn. (Type A.)

Upper—Leaf Section: A, upper epidermis; B, palisade; C, mesophyll parenchyma; D, lower epidermis.

Lower—Midvein Section: 1, collenchyma; 2, fibers; 3, ducts; 4, sieve.

lower epidermis. The vascular elements are surrounded by fibers excepting a small area on the upper side of the duct region which is occupied by collenchyma. The ducts occur in radiating rows with strips of parenchyma intervening.

Erythroxylon areolatum, Linn.—As noted in the section dealing with the morphological characters of the leaves of this species, the specimens are of three types.

Type A.—(Plate XV.) Specimens from three sources were examined and two of these were exactly the same thickness, 157.5 microns. The third specimen was 139.5 microns in thickness. Aside from this difference in thickness of lamina and slight differences in the height of the ridge over the midvein, the leaves were identical in histological structure. The upper epidermis consists of tangentially elon-

gated cells, rather regular in size and form and with a thin cuticle on the exposed surface. The lower epidermal cells bear papillae, are but slightly smaller than those of the upper surface and show a brownish or a greenish coloration. Palisade cells are fairly regular in form and size, with the greater number of chloroplasts appearing at the end in contact with the upper epidermis. The proportion of height to width averages four to one and the number of palisade cells in contact with an epidermal cell ranges from two to four. Mesophyll parenchyma consists of four to seven layers of cells, differing in form in different portions of this region. Funnel or collecting cells are especially prominent immediately beneath the palisade and these communicate with isodiametric cells in the midportion of the mesophyll. The lower portions of mesophyll parenchyma appear as flattened elongated cells arranged in layers and some of these cells are of branched type. Chloroplasts and prisms of calcium oxalate occur within the mesophyll cells and aerating cham-

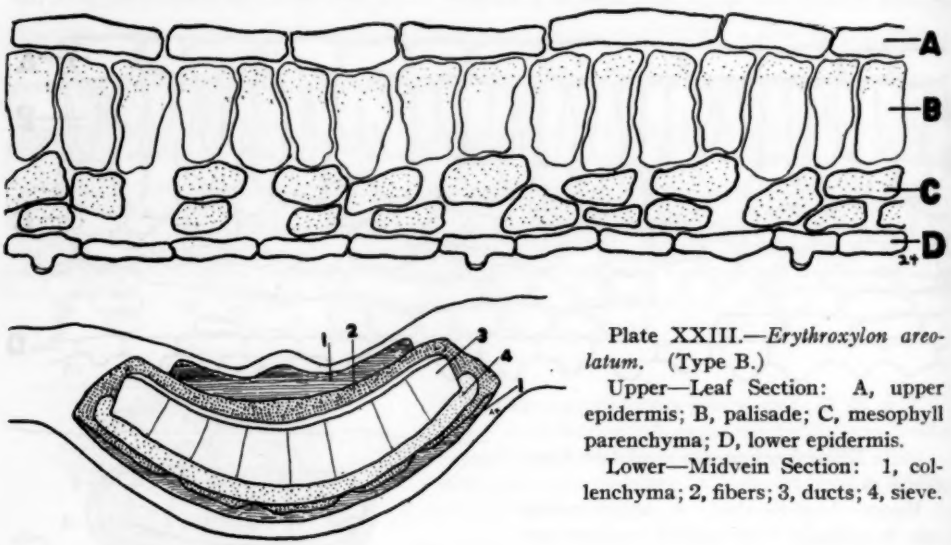


Plate XXIII.—*Erythroxylon areolatum.* (Type B.)
Upper—Leaf Section: A, upper epidermis; B, palisade; C, mesophyll parenchyma; D, lower epidermis.
Lower—Midvein Section: 1, collenchyma; 2, fibers; 3, ducts; 4, sieve.

bers are frequent. Fibrous elements show a slight tendency toward branched form.

Primary vein branches are placed more toward the upper leaf surface and the fibrous tissue displaces the palisade cells at the points where the veins occur. The vein does not entirely displace the mesophyll parenchyma and two or three layers of this tissue underlie each vein.

The ridge on the upper leaf surface varies in height from 73.5 to 115.5 microns. Collenchyma occurs within the ridge and extends internally to the fiber zone. The region below the midvein shows little trace of collenchyma. Pericyclic fibers extend completely around the vascular elements, being best developed on the lower side. The ducts occur in radiating rows, each row being separated from the others by a line of woody parenchyma.

Type B.—(Plate XXIII.) Leaves of this specimen average 105 microns in thickness but are variable in that the blade is noticeably thicker over the veinlets. The upper epidermal cells appear in tangentially elongated form, being three to

seven times longer than wide. In sections of some leaves and in different portions of the same leaf this epidermis is reduced in thickness and in one instance appeared as a thick cuticle, details of cellular structure not being apparent. The lower epidermis is sparsely provided with papillae and also shows peglike projections from some of the cells. These projections are much narrower than papillae and do not show a distinct cavity as do the latter. Palisade cells are exceedingly large as compared with the other tissues, are very irregular both in size and form and show a thicker wall than is usually present in this type of tissue. The number of palisade cells abutting on an epidermal cell is two or three. Mesophyll parenchyma consists of two to four layers of elongated irregular cells with a brown content and enclosing large aerating chambers. Fibrous elements of decidedly branched form are numerous in this portion. Branched forms of parenchyma occur toward the lower epidermal surface.

The locations of primary, and even the smaller branch veins, are marked by an increase in thickness of the leaf blade at the points of occurrence. In the case of primary veins the fibrous sheath narrows down to a wedge of one or two fibers

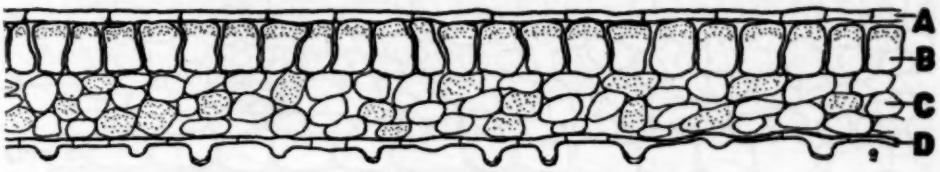


Plate XIV.—*Erythroxylon areolatum*, Linn. (Type C.)

Upper—Leaf Section: A, upper epidermis; B, palisade; C, mesophyll parenchyma; D, lower epidermis.

Lower—Midvein Section: 1, collenchyma; 3, ducts; 4, sieve; 5, conducting parenchyma.

which extends to the upper epidermis, usually displacing but a single palisade cell. At least one layer of parenchyma intervenes between the vein and the lower epidermis.

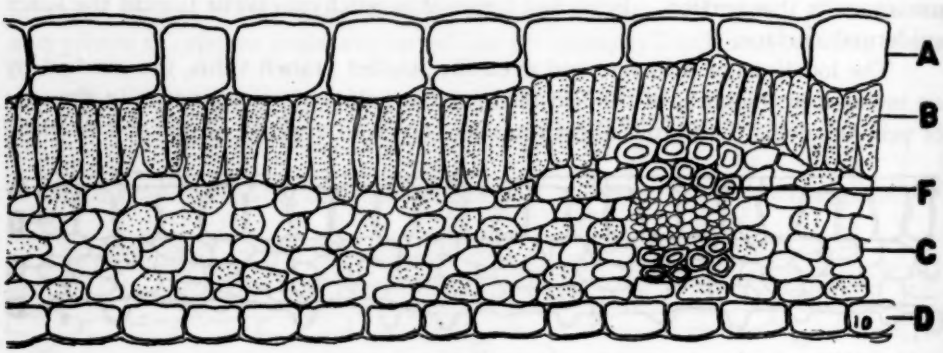
The upper surface of the leaf is depressed over the midvein but at the midpoint of the depression there is a slight elevation which can hardly be termed a ridge. Collenchyma occurs within this elevation and for a short distance on each side of the depression. A narrow zone of collenchyma also occurs on the lower side of the vein. Fibrous tissue encircles the vascular elements but is incomplete on the lower face, as collenchyma intervenes between the groups of fibers and at best the fibrous layer is thin at this point. There is a corresponding increase in the amount of fibrous tissue on the upper side of the vascular elements. A narrow zone, apparently sieve, occurs on the upper side of the ducts in addition to the main body located below the latter.

Type C.—(Plate XIV.) This leaf is the thinnest of any examined, averaging but 75 microns. The upper epidermis appears as elongated very narrow cells which are four to eight times longer than broad and the outer wall is not strongly cutinized. Although papillae occur upon the lower epidermis, they are scattered and not very large. Palisade occurs as large, nearly rectangular cells, coloration

being deepest on the side toward the epidermis. One to two palisade cells abut on each epidermal cell. The mesophyll parenchyma occupies but little more of the total area of the leaf than the palisade. This tissue is fairly compact with but small aeration spaces and hardly exceeding four layers of cells. Calcium oxalate occurs sparingly.

The leaf blade is slightly thickened in the vicinity of the primary veins and the latter completely fill the space between the upper and lower epidermal layers, mesophyll tissues being lacking at these points.

Although the ridge over the midvein is small, it is well developed when one considers that the leaf blade is very thin. In fact the ridge rises 52 microns above the general surface and the leaf blade is but 75 microns in thickness. The support-



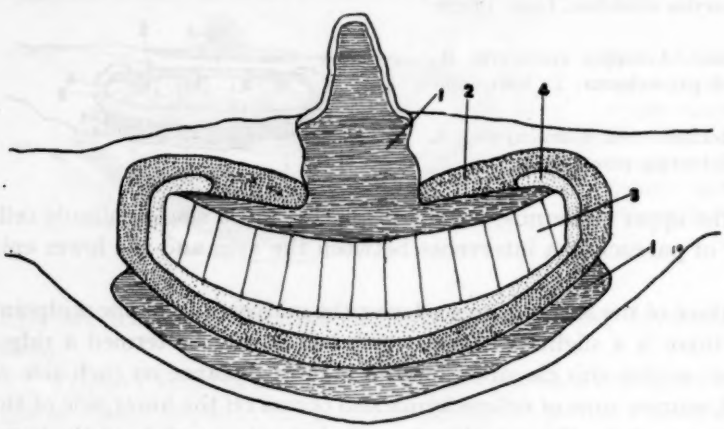


Plate XVI.—*Erythroxylon anguifugum*, Mart.

Upper — Leaf Section: A, upper epidermis; B, palisade; C, mesophyll parenchyma; D, lower epidermis; F, veinlet.

Lower—Midvein Section: 1, collenchyma; 2, fibers; 3, ducts; 4, sieve.

ing tissues of this region are mainly collenchyma, fibers being reduced to a minimum and only occurring as isolated cells in connection with the ducts. The tissues of the ridge and a zone in contact with the lower leaf surface are collenchymatic. Sieve is better developed than ducts and extends well around the ends of the duct region. A narrow zone of parenchyma occurs on the upper side of the ducts, projecting between groups of the latter cells and causing a segmented appearance in the xylem zone.

Erythroxylon anguifugum, Mart.—(Plate XVI.) Leaves from six samples of this species average 155 microns in thickness. A seventh sample, identical in histological structure, was about 250 microns in thickness. The upper epidermis

consists of large square cells occurring in both single and double layers, the cells in the latter case being reduced in height so that the two occupy but little more space than the single layer. The free surfaces bear a moderately thin cuticle. The lower epidermis is devoid of papillae and the cells are about one-half the height of those of the upper epidermis. Cuticle is less prominent on the lower surface. Palisade consists of regularly arranged and fairly symmetrical cells containing chloroplasts in great number. Variations in length of these cells are chiefly due to a slight convexity of the inner wall of the epidermal cells. Four to five palisade cells abut on each epidermal cell. The mesophyll parenchyma consists of four to six layers of isodiametric cells with but little sign of large aeration cavities. The parenchyma in contact with the lower epidermis may assume rectangular form in-

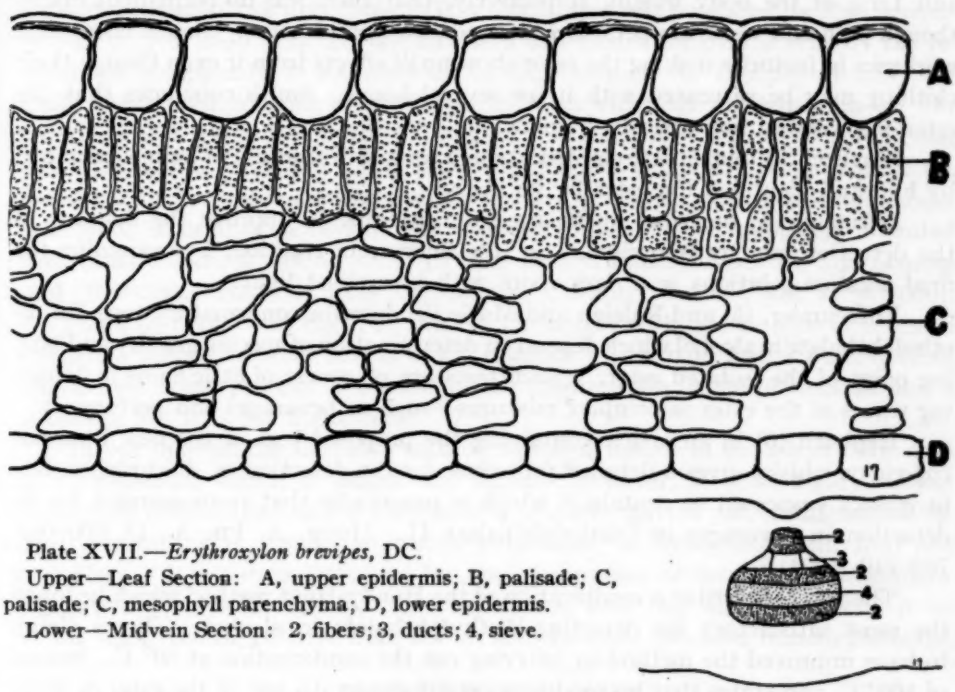


Plate XVII.—*Erythroxylon brevipes*, DC.
Upper—Leaf Section: A, upper epidermis; B, palisade; C, palisade; C, mesophyll parenchyma; D, lower epidermis.
Lower—Midvein Section: 2, fibers; 3, ducts; 4, sieve.

stead of isodiametric. The lower parenchyma cells occasionally occur as branched forms. Most of the mesophyll cells are deeply colored by chlorophyll. Prismatic calcium oxalate occurs sparingly and for the most part as fiber crystals.

The leaf blade is about the same thickness in the vicinity of the primary veins as elsewhere, but at the points where these structures occur, the fibrous sheath encroaches largely upon palisade and mesophyll parenchyma, leaving but a small strip of each between the vein and the respective epidermal layers.

The midvein ridge on the upper leaf surface is well developed and very similar to that of *E. Coca* in proportions and form. The midvein vascular tissues are completely or almost completely encircled by pericyclic fibers, in the latter case the circle being broken on the upper side of the bundle by a mass of collenchyma and conducting parenchyma. Collenchyma also occurs on the lower side of the bundle external to the fiber zone and also extends into the ridge.

(To be concluded)

DIETHYLPHTHALATE IV.*

BY J. A. HANDY AND L. F. HOYT, LARKIN CO., INC., BUFFALO, N. Y.

I. INTRODUCTION.

Data appearing in the literature since our last paper, Diethylphthalate III (1),[1] was presented have been reviewed, and the study of the detection of this ester has been extended to include particularly essential oils and perfumes.

II. REVIEW OF THE LITERATURE.

Smith (2) reports several tests on the toxic properties of diethylphthalate and states that when given, *per ora*, to rats and pullets in amounts up to 0.5% and 1.5% of the body weight, respectively, that there was no permanent injury though pain and weakness persisted in some cases for 12 hours. Smith notes that workmen in factories making the ester show no ill effects from it even though their clothing may be saturated with it for several hours. Smith concludes that the ester is probably non-toxic to humans.

Harrison (3) found diethylphthalate in a sample of tincture of iodine examined by him and identified the ester by its taste.

Leffmann (4) describes an unsuccessful attempt to improve the delicacy of the detection test by resorcinol, *i. e.*, the fluorescein reaction, by examining the final alkaline solutions in a dark room with ultraviolet light.

Vuilleumier, (5) and Raleigh and Marie (8) describe confirmatory tests for diethylphthalate in alcohol which depend on determination of specific gravity and boiling point of the isolated ester. (Such tests are of course of little value in detecting traces of the ester in complex mixtures—such as beverages and perfumes.)

Hepburn (6) in an article containing the proposed text of the new Pharmacopœia on whisky gives a detailed procedure for the detection of diethylphthalate in whisky suspected to contain it which is practically that recommended for its detection in beverages in Diethylphthalate II. (JOUR. A. PH. A., 13, 600–609, 702–710 (1924).)

Thoms (7) describes a modification of the Handy-Hoyt method which he found the most satisfactory for detecting diethylphthalate in alcohol. Thoms claims to have improved the method by carrying out the condensation at 80° C., instead of 160° C. and states that his modification will detect 0.5 mg. of the ester in 50 cc. of sample. In addition this author outlines a procedure for the qualitative isolation of diethylphthalate from a sample by sublimation as phthalic anhydride after saponification and extraction.

Breithut and Apfelbaum (9) describe a method for the detection of diethylphthalate in perfumes in which the perfume oils are salted out with saturated salt solution and the ester detected in the aqueous solution by the phenolphthalein test. No data is given by them as to the sensitiveness of this test.

Brown (10) describes the use of the dialkyl esters—particularly ethyl and butyl—of phthalic acid as plasticizers in pyroxylin lacquers. His article includes an excellent bibliography which shows that the use of these esters in the pyroxylin industry dates back over 30 years.

---

* Scientific Section, A. PH. A., Des Moines meeting, 1925.

[1] NOTE: Numbers in parentheses refer to similarly numbered references in the bibliography.

Levinson (11) describes a modified fluorescein test for phthalates in which a sample is evaporated nearly to dryness, followed by the addition of one gram of boric acid, with evaporation to complete dryness and fusion of the residue with one gram of resorcinol. According to Levinson this method gives negative blanks and he states that a distinct fluorescence is obtained when only 1 cc. of a hair tonic containing 60% of 39B Specially Denatured Alcohol is used. (Such a 1-cc. sample would contain approximately 15 milligrams of diethylphthalate, and several fluorescein type tests previously described in the literature would easily detect 0.5 milligram in such a 1-cc. sample.)

Note.—The articles of Raleigh and Marie, Breithut and Apfelbaum, and Levinson state that these authors had found the official test for the detection of diethylphthalate to be unreliable. This official test was published as *Pro. Mimeograph Col.* No. 2840 9/23/21, but has been superseded for over a year by the revised test of Appendix to Regulations No. 61, Formulæ for Completely and Specially Denatured Alcohol, revised Sept. 1924, in which the condensation of the phthalate with resorcinol is carried out in acid solution. We wish to point out that the original procedure was founded on incorrect chemical principles since the formation of fluorescein by the condensation of phthalate with resorcinol cannot take place in an alkaline fusion. As a matter of fact if pure fluorescein is heated with caustic soda, it decomposes, yielding carbon dioxide, resorcin, and benzoic acid (Beilstein, "Handbuch der Organischen Chemie," 3rd ed., Vol. II, p. 2060). We found by actual test that pure fluorescein heated with caustic soda effervesced and left a residue entirely devoid of fluorescence. It is true that a dark reddish brown fluorescent product is formed in the caustic soda fusion of resorcin and a phthalate but it is not fluorescein.

In our opinion the Levinson method, which is unique in the use of boric acid as a condensing agent, is simple and rapid. However, it gives highly colored olive-green blanks; and unless the fusion is properly carried out, condensation of small amounts (*i. e.*, 1 mgm. or less) of phthalates, to form fluorescein, may not take place. It makes no provision for the elimination of interfering substances by extraction or other means. Our experience with this method showed it to be less sensitive and positive than the present Internal Revenue Bureau methods.

III. EXPERIMENTAL PART.

The idea of using a lower temperature for the condensation of resorcinol and diethylphthalate such as the 80° C. advocated by Thoms was tried out. Comparative tests were made using the same amounts of reagents but heating at different temperatures: 0.5-cc. portion 39-C Denatured Alcohol (equivalent to approx. 5 milligrams diethylphthalate) was evaporated to dryness after adding 1 cc. 10% NaOH, 2 cc. 1.84 H_2SO_4 containing 25 mg. resorcin per cc. were then added. The mixtures were heated (*a*) 10 minutes on the steam-bath, (*b*) 2 hours on the steam-bath, (*c*) 3 minutes at 125° C., and (*d*) 3 minutes at 150° C. The reaction mixtures were poured into 50-cc. distilled water and made alkaline. It was found that the intensity of fluorescence of (*a*) and (*b*) was practically the same and only a fraction of (*d*), heated at the higher temperature. (*c*) was intermediate in intensity. This test which confirms similar ones we have previously made indicates very clearly that the formation of fluorescein (which is a condensation of resorcinol

and phthalic acid in which water is eliminated) is much more complete at a temperature of 150° C. than at 80° C. or 100° C. Heating for a long time at 100° C. appears not to increase the "yield" of fluorescein.

Consequently in the following tests by the fluorescein reactions we have used a temperature of 150° C. in order to increase the amount of fluorescein formed even at the risk of decomposing the sample itself with the hot acid. A temperature of 150° C. is by actual trial less liable to bring about such decomposition than the 160° C. temperature formerly used.

DETECTION IN PERFUME RAW MATERIALS AND PERFUMES.

Diethylphthalate finds its way into perfumes chiefly from two sources, *viz.:* (1) the alcohol used in making the perfume is often Specially Denatured Alcohol 39B or 39C containing $2^1/_2\%$ and 1%, respectively, of the ester, and, or (2) the essential oils or other perfume ingredients may have contained the ester added legitimately as a vehicle, fixative, or adjusting agent, or in some cases added in excessive proportion as a diluent.

If either 39B or C Denatured Alcohols have been used the detection of diethylphthalate in the perfume is very simple. The perfume will contain such a relatively large amount of the ester that a 1-cc. sample made alkaline, evaporated and the residue condensed with resorcinol and 1.84 H_2SO_4 will give a fluorescein test of such intensity that there can be no mistake about its presence. However, if the perfume has been made without these 39B and C Denatured Alcohols, from essential oils or synthetics which contain only a few per cent of the ester (and hence amounting to only a few hundredths of 1% in the final perfume), its detection is more difficult.

After a careful preliminary study of various methods, including extraction methods with pure water and brine, with and without alcohol, of essential oils to which the ester was added a procedure was adopted suitable for detecting diethylphthalate or other phthalates in perfumes and perfume raw materials.

Commercial samples of 25 of the more costly essential oils and synthetics used in perfumes were subjected to this test, according to the following procedure, with the results shown in Table I.

Procedure.—Qualitative Fluorescein Detection Test for Diethylphthalate or other Phthalates in Essential Oils and other Raw Materials for Perfumes.

Reagents: (1) *Alcoholic Potash.*—Dissolve 1.5 Gm. $AgNO_3$ in 3 cc. water, add to 1 liter of No. 30 Denatured Alcohol, and mix thoroughly. Dissolve 3 grams KOH in 10–15 cc. warm alcohol. After cooling, pour slowly into alcoholic $AgNO_3$. Do not shake. Let stand over night. Filter and distill. To the distilled alcohol so obtained add 3–5 grams *m*-phenylene-diamine hydrochloride per liter, boil under reflux for several hours. Distill and preserve the aldehyde-free alcohol in brown bottles. To this aldehyde-free alcohol add 40 grams per liter of C.P. KOH, heat until dissolved, cool and filter. The resulting alcoholic potash should be water white, or at most pale yellow, and should give an entirely negative and colorless blank in the fluorescein reaction test for phthalates (*i. e.*, 10-cc. alcoholic KOH evaporated to dryness, residue heated with 0.05 Gm. resorcin and 1 cc. 1.84 H_2SO_4 for 3 minutes at 150° C., resulting mixture added to 50 cc. of a 2% solution of NaOH).

(2) *Resorcinol—Sulphuric Acid.*—Dissolve 2.5 grams C.P. Resorcinol in 100 cc. 1.84 H_2SO_4 with the aid of heat. (*Note.*—Part of the resorcinol separates as a fine white ppt. on cooling but the reagent remains entirely satisfactory if kept in a stoppered container, to prevent absorption of moisture by the H_2SO_4).

Qualitative Test.—To 0.1 cc. (usually 5 small drops) of sample in a small beaker, flask or short test-tube, add 1 cc. alcoholic potash prepared as above. Heat on the steam-bath until the alcohol is completely removed. From a graduated pipette add 0.5-cc. resorcinol—H_2SO_4 reagent, rotating the container so that the acid thoroughly wets the entire residue, and heat for 3 minutes in an oil-bath at a temperature not over 150° C. Cool and pour the reaction mixture into 40-cc. distilled water in a small flask or an 8″ × 1″ test-tube. Make alkaline with 10 cc. of 10% NaOH solution. A yellowish green fluorescence persistent for 24 hours and longer is proof of the presence of diethylphthalate or some other phthalate in the sample.

TABLE I.

Lab. no.	Name.	Qual. test for phthalates.	Lab. no.	Name.	Qual. test for phthalates.
1.	Cinnamic Alcohol	−	14.	Patchouly Vieux	−
2.	Citronellol	−	15.	Petitgrain	−
3.	Clove Clair	−	16.	Phenylethylalcohol	−
4.	Oil Geranium	−	17.	Absolute Rose	−
5.	Hydroxycitronellol	−	18.	Absolute Rose S	+ (Strong)
6.	Alpha Ionone	−	19.	Rose Liq.	+ (Moderate)
7.	Methyl Ionone	−	20.	Santal Citrin	−
8.	Jasmine Liq.	−	21.	Tolu Clair	+ (Intense)
9.	Labdanum Clair	+ (Intense)	22.	Tuberose Liq.	−
10.	Methyl Anthranilate	−	23.	Vetivert Vieux	−
11.	Mousse de Chene (A), liquid	+ (Intense)	24.	Sauge Sclaree	+ (Moderate)
12.	Absolute Orange	−	25.	Mousse de Chene	
13.	Fleur d'Oranger	+ (Intense)		(B) thick, pasty	−

The samples of Labdanum Clair and Tolu Clair contained a very large proportion of diethylphthalate, Mousse de Chene (A), liquid and Fleur d'Oranger both contained a large amount and Absolute Rose S, Rose Liq. and Sauge Sclaree smaller quantities.

During the course of these tests the important and valuable observation was made that in samples containing an appreciable amount of diethylphthalate there occurred a separation of fine silky needle-like crystals of potassium phthalate a few minutes after the sample (5 drops) mixed with 1-cc. alcoholic potash was placed on the steam-bath. In none of the samples found to be free from diethylphthalate did any needle-like crystals form. With some samples, notably Clove Clair and Methyl Anthranilate a crystallization takes place just before the alcohol is completely evaporated but the crystals are entirely different from those of potassium phthalate.

The sensitiveness of this simple qualitative test was determined by adding known small amounts of diethylphthalate to the 18 samples shown to contain none by the qualitative fluorescein test and subjecting 0.1 cc. (or 5 drops) portions of such samples to saponification with 1-cc. alcoholic potash.

Preliminary control tests on 0.1 cc. of diethylphthalate-free sample to which 1-cc. alcoholic potash was added showed that in none of these samples did any needle-like crystals form during evaporation.

Series I.—It was found that in every one of the 18 samples so tested the addition of 5% of diethylphthalate was easily and unmistakably revealed by the formation of the needle-like crystals of potassium phthalate when 0.1 cc. of sample (*i. e.*, containing approx. 5 milligrams of diethylphthalate) was saponified on the steam-bath with 1 cc. alcoholic potash.

Series II.—The test was repeated with 0.1-cc. portions of these same 18 samples containing only 2% of diethylphthalate and in 13 of the 18 samples the needle-like crystals appeared. In the case of Clove Clair, Jasmine Liquid, Methyl Anthranilate and Absolute Orange the crystals failed to appear due of course to the fact that in the presence of these substances the 2 milligrams (approx.) of potassium phthalate formed was soluble.

DETAILS OF THE NEW POTASSIUM PHTHALATE CRYSTAL TEST FOR THE DETECTION OF PHTHALATES IN ESSENTIAL OILS AND OTHER RAW MATERIALS FOR PERFUMES.

Apparatus.—A very small beaker (the 10-cc. beaker used with the Zeiss immersion refractometer is excellent) or a short glass vial about $^3/_4$″ to 1″ in diameter is the most convenient container, although a short test-tube may be used if these are not available.

Reagent.—Alcoholic potash, 40 grams per liter, prepared from aldehyde free alcohol as previously described.

Procedure.—To 0.1 cc. or 5 small drops of sample in a suitable glass container add 1-cc. alcoholic potash reagent. Place on the steam-bath and allow to evaporate *slowly*. Observe the sample *frequently* by holding the container in front of a bright light (a pocket flashlight may be used for convenience). If the sample contains 5% of diethylphthalate the small silky needle-like crystals of potassium phthalate will be observed soon after the sample has been placed on the steam-bath (*i. e.*, usually within 5 minutes) and before the alcohol has entirely evaporated. In many cases as small an amount of diethylphthalate as 2% will be clearly shown by this test.

Notes.—(1) for comparison run a standard test on 5 milligrams of diethylphthalate (0.5-cc. 39C Denatured Alcohol plus 1-cc. alcoholic potash).

(2) It is important that the heating and evaporating be slow and that the sample be observed before the bulk of the alcohol has evaporated, since a small amount of the crystals are not as easily seen when the residue approaches dryness.

(3) In the case of samples containing gross amounts of diethylphthalate the solution soon after placing on the steam-bath will appear to almost solidify owing to the great mass of potassium phthalate crystals formed.

(4) The dried residue may be subjected to the fluorescein test if desired by adding 0.5-cc. resorcinol-sulphuric acid reagent, heating for 3 minutes at 150° C. and making alkaline.

(5) The crystals of potassium phthalate will also form if the sample to which alcoholic potash has been added is allowed to evaporate spontaneously at room temperature. If this procedure is used, the crystals tend to be larger and sometimes form in fan-shaped bundles.

Caution.—It should be noted that in this potassium phthalate crystal test the presence of water (*i. e.*, in excess of the water in 190° proof alcohol) will prevent the formation of the crystals. The method is applicable directly to denatured alco-

hols, perfumes, essential oils and other water-free liquids. In the case of toilet waters and beverages the sample should be extracted with petroleum ether and the test applied to the extract.

The Potassium Phthalate Crystal Test was also applied to 20 additional samples of more common essential oils which preliminary tests had shown to be free from diethylphthalate, using 0.1-cc. portions of each oil containing 2 mg. and 5 mg. respectively of diethylphthalate. The formation of potassium phthalate crystals in these tests is shown in Table II.

It will be noted that in each of the 20 samples, 5 mg. of diethylphthalate could easily be detected in 0.1 cc. of sample and that in over half of the samples 2 mg. could similarly be found.

TABLE II.

No.	Name of essential oil.	0.1-cc. sample containing 2 mg. diethylphthalate.	0.1-cc. sample, containing 5 mg. diethylphthalate.
1.	Anise	+	+
2.	Bay	+	+
3.	Bergamot	(−)	+
4.	Caraway	+	+
5.	Cedar Leaf	+	+
6.	Cedarwood	+	+
7.	Cassia	(−)	+
8.	Cloves	(−)	+
9.	Cumin	(−)	+
10.	Eucalyptus	(−)	+
11.	Geranium (African)	(−)	+
12.	Lavender	+	+
13.	Lemongrass	(−)	+
14.	Nutmeg	+	+
15.	Sweet Orange	(−)	+
16.	Lemon	+	+
17.	Peppermint	+	+
18.	Rosemary	+	+
19.	Rhodium	(−)	+
20.	Sandalwood	+	+

DETECTION OF DIETHYLPHTHALATE IN PERFUMES.

Diethylphthalate may be easily and unmistakably detected in perfumes made with either 39B or 39C Specially Denatured Alcohols, on a sample as small as 1 cc. by the fluorescein type test. The standard method of the Bureau of Internal Revenue (Appendix to Regulations 61, revision of Sept. 1924), the Andrew Method, or the procedure recommended in our paper Diethylphthalate II can all be used successfully. The test can be made on the perfume directly without extraction with petroleum ether, saturated salt solution or other solvents. The phenolphthalein method of Breithut and Apfelbaum gives satisfactory results on perfumes made from 39B or 39C Alcohols (in which the content of diethylphthalate of the finished perfume would be 1% or more). However, our experience has been that phenolphthalein test as applied to essential oils containing 5% or less of the ester and to perfumes made from such ingredients with diethylphthalate-free alcohol (in which finished perfumes the content of diethylphthalate would be only a few hundredths of 1%), is not as sensitive as either the fluorescein type test or our new potassium phthalate test. The phenolphthalein test was applied to 18

samples of essential oils to which 5% diethylphthalate had been added, and using the 0.1-cc. portions (in which the ester was unmistakably found in every case by both the fluorescein and potassium phthalate crystal tests) the phenolphthalein test was positive on only two samples.

We have tried our new potassium phthalate crystal test on 20 samples of perfumes, including a variety of floral odors and bouquets, known to have been made with either 39B or 39C Specially Denatured Alcohols. To a 1-cc. portion of each perfume was added 1-cc. alcoholic potash and the mixture allowed to slowly evaporate. The characteristic needle-like crystals of potassium phthalate formed in every case. With some perfumes the addition of alcoholic potash caused a turbidity or precipitation of a gummy mass but this in no way interfered with the test.

To detect diethylphthalate in a perfume made with alcohol free from that ester but which contains essential oils or other perfume ingredients to which the ester has been added, it is necessary of course to use a larger sample. Experiments which we have made indicate that the crystal test will detect 5 milligrams of diethylphthalate (and in many cases 2 milligrams) in a 10-cc. portion of perfume.

PROCEDURE FOR DETECTING DIETHYLPHTHALATE IN PERFUMES BY THE POTASSIUM PHTHALATE CRYSTAL TEST.

(A) To 1 cc. of perfume in a small beaker add 1-cc. alcoholic potash (40 grams per liter). Evaporate slowly with gentle heat and observe frequently, holding the beaker in front of a light. Provided the 1-cc. sample used contains 5 milligrams or over of diethylphthalate (*i. e.*, 0.5%, and in many cases if only 2 milligrams are present) the characteristic silky needle-like crystals of potassium phthalate will be seen to form in the solution. If no characteristic crystals form, it is proof that some alcohol other than 39B or 39C has been used in the manufacture of the perfume.

(B) If no crystals form by Test A, repeat, using 10 cc. of sample and 1-cc. alcoholic potash. Evaporate and observe as in Test A. If the sample contains 5 milligrams or more of diethylphthalate (*i. e.*, 0.05%), crystals of potassium phthalate will form.

Notes.—If desired the presence of the ester may be confirmed by making the fluorescein test in the usual way on the residue evaporated to dryness.

The difference in the sensitiveness of detecting diethylphthalate by the crystal test varies somewhat owing to the fact that various essential oils influence the solubility of potassium phthalate.

SUMMARY.

1. Work on the fluorescein type test has been extended to include the detection of diethylphthalate in essential oils and perfumes.

2. A new qualitative test for diethylphthalate has been worked out based on the formation of the characteristic crystals of potassium phthalate when an essential oil or a perfume is heated with alcoholic potash. This method is simple, rapid and sensitive. It is applicable directly to essential oils, perfumes, denatured alcohols and other water-free liquids and may be applied to the petroleum ether extract of products such as toilet waters and beverages. Results of its application

to a great variety of essential oils, perfume ingredients and perfumes show that it will detect with certainty 5 milligrams (and often as small an amount as 2 milligrams) of diethylphthalate in a 0.1-cc. portion of an essential oil or in a 10-cc. portion of perfume.

BIBLIOGRAPHY.

(1) J. A. Handy and L. F. Hoyt, "Diethylphthalate III," JOUR. A. PH. A., 14, 219 (1925).—Presented at the Scientific Section, A. PH. A., Buffalo, N. Y. meeting, August 1924.

(2) O. M. Smith, "Toxic Properties of Diethylphthalate," JOUR. A. PH. A., 13, 812 (1924).

(3) J. W. E. Harrison, "Diethylphthalate in Tincture of Iodine," *Am. J. Pharm.*, 96, 758 (1924).

(4) H. Leffmann, "Notes on Some Reactions of Diethylphthalate," *Am. J. Pharm.*, 96, 772 (1924).

(5) E. A. Vuilleumier, "Confirmatory Test for Presence of Diethylphthalate in Denatured Alcohol," *Ind. Eng. Chem.*, 16, 1120 (1924).

(6) J. S. Hepburn, "Adulteration of Medicinal Alcoholic Beverages," *Am. J. Pharm.*, 97, 44 (1925).

(7) H. Thoms, "Detection of Diethylphthalate in Alcohol," *Pharm. Ztg.*, 70, 119 (1925).

(8) J. T. Raleigh and S. U. Marie, "Detection of Diethylphthalate in Alcohol," *J. Am. Chem. Soc.*, 47, 589 (1925).

(9) F. Breithut and P. M. Apfelbaum, "Detection of Diethylphthalate in Perfumes," *Ind. Eng. Chem.*, 17, 534 (1925).

(10) B. K. Brown, "Use of Plasticizers in Lacquers," *Ind. Eng. Chem.*, 17, 568 (1925).

(11) S. Levinson, "Detection of Diethylphthalate," *Ind. Eng. Chem.*, 17, 929 (1925).

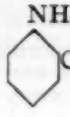
SOME STUDIES ON TASTE AND CHEMICAL CONSTITUTION.

BY THOMAS C. JALESKI.

There is, it seems, no constancy, or very little constancy, in the relation between chemical groups, structure and taste in organic compounds. Also it is apparent that there exists very little relation between physiological action of a substance and taste. If some sort of relation could be established between the above factors, the economic importance would be very great. Taste is an important consideration in the selection of a therapeutic agent.

A few rules have been observed to be important, however, and their application has brought forth some very good results. For instance, it is known that in the aliphatic alcohols increasing the hydroxyl groups augments the sweet taste. For example, glycerin with only three hydroxyl groups is moderately sweet while the hexoses with six hydroxyl groups are true sugars. Sternberg said there are only two groups which can produce a sweet taste. These are the hydroxyl-OH group and the amino-NH_2 group.

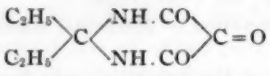
The replacement of an aliphatic group by an aromatic one tends to change the compound from a sweet tasting substance to an intensely bitter one. Butenyl glycerin $CH_3.CH(OH).CH_2(OH)$ is sweet while phenyl glycerin $C_6H_5.CH(OH).CH_2(OH)$ is bitter.

Also the proximity of an amino-NH_2 group and a carboxyl-COOH in the aromatic hydrocarbons affects taste. Anthranilic acid  is sweet while *p*-

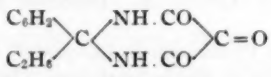
amino benzoic acid is tasteless. In general, Sternberg says sweetness and bitterness are determined by the position and agreement of the negative groups.

Observations and experiments which I have conducted with the alkyl and alkyl aryl derivatives of baribituric acid show a prevailing tendency of these compounds to have a bitter taste. Neither the size nor kind of the substituted radicals seem to be of any great importance in determining the taste. It also seems to make no difference in which positions substitutions are made.

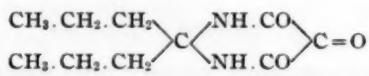
Veronal (diethylbarbituric acid) is a white powder having a faintly bitter taste. It is a very desirable hypnotic.



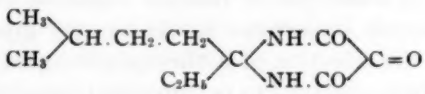
Luminal has a very bitter taste also. The bitter taste here is probably enhanced by the presence of the aryl group.



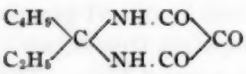
Proponal (dipropylbarbituric acid) resembles Veronal very closely, but is more potent as a soporific and is also more toxic. It also has a bitter taste but one much more intense than that of Veronal.



Isoamylethylbarbituric, which goes under the trade name amytal, is a very effective hypnotic and also possesses a marked bitter taste.



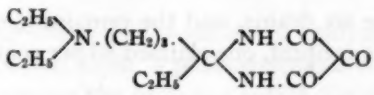
Another very effective hypnotic, and also a bitter tasting substance is *N*-butyl ethyl barbituric acid.



Since the above are more or less key compounds of the series it seems justifiable to consider the bitter taste as a characteristic of the barbituric acid series. From the above discussion it would seem that the bitter taste was correlated with soporific properties. Such is not the case however. Dox and Yoder[1] made several dialkyl barbituric acids with tertiary amino groupings, which had a bitter taste but were not effective as hypnotics at all.

5 ethyl-5γ diethyl amino propyl barbituric acid was made and found to have a bitter taste but no soporific properties.

[1] Dox and Yoder, *J. Amer. Chem. Soc.*, 45, 1757–62 (1923).



Such was the case with the similiar derivatives which they made.

It might be inferred that the rule formulated by Sternberg, stating that the entrance of negative groups reduces the bitter taste, would apply here also. It very likely does. Noctal (Brompropenyl isopropyl barbituric acid) contains bromine in the side chain and has only a very slight bitter taste.

Inspection of the structure of the barbituric acids seems to offer no explanation of the phenomena exhibited. The inference might be made that the ring structure was responsible for the characteristic taste, but on closer inspection this assumption seems untenable. Bitter taste is a characteristic of a great many organic compounds and is not limited to the type of ring structure found in the barbituric acids. Also, as I have stated above, the correlation of soporific properties and taste has no foundation in fact. Efficiency as a hypnotic agent seems to depend on the water lipoid solubility of the compound, and this solubility is often a function of the complexity of the molecule. But water lipoid solubility does not effect the taste as far as we know. The fact, however, that some compounds of the barbituric series, due to the fact that they are not soluble in water or lipoids, are not hypnotics does not prove by any means that they would not be very effective ones were they able to diffuse into the cell. Therefore all members of the barbituric acid series possessing a bitter taste may be potentially hypnotics, but some may not be able to exhibit the property.

Recently W. Straub[1] has found that the bitter taste of alkali metal salts of diethyl barbituric acid is avoided by addition to them of $Na_2.HPO_4$. The two salts are to be mixed in equal proportions.

BUTLER UNIVERSITY,
INDIANAPOLIS.

TINCTURE OF IODINE ANALYSES.

BY EDWARD S. ROSE.

Very few pharmacists, if any, make Tincture of Iodine U. S. P., since it can be bought for much less than it can be made by them. The large manufacturer uses specially denatured alcohol No. 25 and can sell his product to the pharmacist for about $7.00 a gallon, while the pharmacist who uses tax-paid alcohol knows it would cost approximately $11.00 a gallon, just for the materials.

On several occasions the writer has been told by salesmen that their particular Tincture of Iodine is a superior product and that many tinctures sold in the drug stores were of inferior quality.

While making an auto trip last summer through parts of two mid-western states the writer bought nine bottles of tincture of iodine at drug stores in different towns and cities. In each case one ounce tincture of iodine U. S. P. was asked for. In all cases but one the price was 25 cents. Seven of the tinctures were in glass applicator bottles, one had a dropper and the ninth just a cork stopper. Seven

[1] W. Straub, U. S. 1,488,884 (April 1, 1924).

measured one ounce, one six drams, and the remaining one, four drachms. Four did not state the alcoholic content, one claimed 83 per cent, and the remaining three read 94.9 per cent.

Each tincture was assayed for iodine, potassium iodide and alcohol, by the U. S. P. X methods. Though these tinctures were bought in the summer of 1925 and should comply with the Ninth Revision, it should be said that these two revisions are essentially identical as to formula and methods of analysis. In addition to the pharmacopœial method for potassium iodide, the residue was dissolved in water and subjected to a residual titration with $AgNO_3$ V. S. and KCNS V. S. A freshly prepared tincture of iodine U. S. P. X was made and assayed with the above.

TINCTURE OF IODINE ANALYSES.

Tabulation of Results.

Sample number.	Iodine, grams per 100 cc.	Potassium iodide, grams per 100 cc.		Alcohol.	
		Weighing.	Titration.	Found.	Per cent stated on label.
1	6.880	4.816	4.716	86.90	..
2	6.670	5.052	4.896	81.00	..
3	7.100	5.056	4.896	85.35	..
4	6.340	4.880	4.776	83.00	83.0
5	7.520	5.260	5.188	80.50	94.9
6	6.919	4.776	4.574	87.95	94.9
7	6.200	5.800	5.440	81.70	..
8	7.185	5.600	5.328	...	..
9	6.620	4.880	4.684	88.50	94.9
U. S. P. sample	6.870	4.934	4.821	88.25	..
U. S. P. specifies	6.5-7.5	4.5-5.5	...	82-84	..

COMMENTS.

Most of the tinctures were found to be well within the U. S. P. requirements for iodine and potassium iodide. The titration method for potassium iodide is probably more exact in its results.

One tincture only conformed to the U. S. P. content for alcohol. A peculiar condition exists in that—if a tincture is made according to the U. S. P. formula—the alcoholic content will necessarily be higher than the required amount specified. Just why some of the tinctures were labeled 94.9 p.c. alcohol is difficult to understand.

SERVICE LABORATORY,
IOWA CITY, IOWA.

A NOTE ON THE ASSAY OF SOLUTION OF ARSENOUS AND MERCURIC IODIDE.

BY WILMER H. SCHULZE.

The U. S. P. IX defines Donovan's Solution as an aqueous solution containing not less than 0.95 per cent nor more than 1.05 per cent of $As I_3$ and not less than 0.95 per cent nor more than 1.05 per cent of $Hg I_2$. In the U. S. P. X the solution is changed to weight volume basis, containing the same quantity of arsenous and mercuric iodide in 100 cc. instead of 100 grams. The method of assaying the solution is the same in both books. The statement is made that the solution must not be dispensed if darker than a pale yellow.

In January 1925, the writer had occasion to analyze a sample of Donovan's solution which was purchased from a pharmaceutical manufacturer. Using the official method for determining the arsenous iodide the result showed for two determinations 0.514 per cent and 0.508 per cent of arsenous iodide. About a month later another chemist in the same laboratory was requested to repeat the assay and found for two determinations 0.401 per cent and 0.398 per cent of arsenous iodide. There was no change in the percentage of mercuric iodide. The solution was practically colorless. Owing to the large volume of routine work, no further study of this variation in results was undertaken until the following November. The sample was allowed to stand on the laboratory table during this interval of time and had changed to a light brown color, and gave a positive test for free iodine.

A pint sample of Donovan's solution was purchased from two pharmaceutical manufacturers. The solutions were in amber glass containers and were placed in a dark cupboard when received. Both samples were practically colorless. Analysis for the arsenous iodide content gave the following results:

Sample 3653 Manufacturer A As I_3 0.236 %
Sample 3652 A Manufacturer B As I_3 0.956 %

On December 17th, half of sample 3652 A was transferred to an amber bottle and allowed to stand on the laboratory table. Both containers were half-filled.

In January and February the arsenous iodide was again determined:

		January.	February.
3652 A	Sample in cupboard	0.897% As I_3	0.846% As I_3
3652 B	Sample on table	0.766% As I_3	0.400% As I_3
3653	Sample in cupboard	0.157% As I_3	0.086% As I_3

A determination of the total arsenic present in samples 3652 B and 3653 gave the following results:

3652 B	Total arsenic	1.001% calculated as As I_3
3653	Total arsenic	1.053% calculated as As I_3

The solutions were not examined again until April. Sample 3652 A showed no change in color while 3652 B and 3653 were both light brown and gave a positive test for free iodine.

CONCLUSIONS.

The arsenous iodide content of Solution of Arsenous and Mercuric Iodide undergoes a rapid change. This change appears to be very much accelerated by exposure to light. The present method for determining the arsenous iodide content is unreliable and should be changed to a determination of the total arsenic present.

BUREAU OF CHEMISTRY,
STATE OF MARYLAND, DEPARTMENT OF HEALTH.

NUMBER OF VOLUMES IN THE LIBRARIES OF THE SURGEONS GENERAL.

The Library of the U. S. Public Health Service (Surgeon General) contains about 9000 volumes; the Library of the Surgeon General of the Army contains nearly 900,000 volumes, bound and unbound.—See p. 334, May JOUR. A. PH. A.

BIBLIOGRAPHY OF PHARMACEUTICAL RESEARCH

Compiled by A. G. DuMez, Reporter on the Progress of Pharmacy.

All articles in these lists will be presented in abstract form in the bound volumes of the YEAR BOOK, which is issued annually. Those desiring abstracts immediately can obtain them for a fee of one dollar each by communicating with A. G. DuMez, University of Maryland, School of Pharmacy, N. E. Cor. Lombard and Greene Sts., Baltimore, Md.

APPARATUS AND MANIPULATIONS.

Anon
Gallium thermometer
Pharm. Zentralh., 67 (1926), 262

PHARMACEUTICAL PREPARATIONS.

Beath, O. A.
Extracts of Aconitum columbianum
JOUR. A. PH. A., 15 (1926), 265
Draganesco, A. L.
Borax as a stabilizer of Dakin's solution
J. pharm. chim., 3 (1926), 319
Iselin, E.
Emulsions and their preparation
Pharm. Acta Helv., 1 (1926), 45
Kroeber, L.
Results of a study of a series of fluidextracts of domestic medicinal plants
Pharm. Zentralh., 67 (1926), 244
Tainter, M. L.
The p_H and potency of digitalis infusions
JOUR. A. PH. A., 15 (1926), 255

PHARMACOLOGY AND THERAPEUTICS.

Dubin, H. E.
Synthesis and standardization of l-suprarenin, the active principle of suprarenal
Apoth. Ztg., New York, 46 (1925), 9; through *Pharm. Zentralh.*, 67 (1926), 262
Heymans, C.
Biologic assay of the vaso-hypertensive and oxytocic activities of pituitary extracts
Arch. Internat. pharmacodynamie, 30 (1925), 275; through *Chem. Abstr.*, 20 (1926), 1494
Heymans, M. C., and Bauckaert, J. J.
Acetylene as a general anesthetic
Compt. rend. soc. biol., 93 (1925), 1036; through *J. pharm. chim.*, 3 (1926), 379
Messner, J.
Atomic weight and pharmacological action
Pharm. Zentralh., 67 (1926), 228
Takagi, S.
On boric acid in the blood.
J. Pharm. Soc. Japan, 529 (1926), 250

GENERAL BOTANY AND BACTERIOLOGY.

Bornand, M.
Bacteriological control of catgut
Pharm. Acta Helv., 1 (1926), 7
Hogstad, A., Jr.
Cultivation and preparation of American wormseed. II
Am. J. Pharm., 98 (1926), 189
Kuester, H. L.
Phytochemical notes
JOUR. A. PH. A., 15 (1926), 259
Anon
Fennel
Chem. & Drug., 104 (1926), 619
Evers, N.
Deterioration of drugs in the pharmacy
Am. J. Pharm., 98 (1926), 207

VEGETABLE AND ANIMAL DRUGS.

Chopra, R. N., and Gosh, N. N.
Some medicinal plants growing in the Himalayas
Indian J. Med. Research, 13 (1926), 533; through *Chem. Abstr.*, 20 (1926), 1302
Defillon, F.
Contribution to the comparative study of Artemisia vulgaris L. and Artemisia selengensis Turcz
J. pharm. chim., 3 (1926), 323
Eder, R. v., and Schneiter, W.
Evaluation of podophyllin
Pharm. Acta Helv., 1 (1926), 15
Gilloy, P.
On the seeds of Euphorbia helioscopia, L
Bull. sci. pharmacol., 33 (1926), 193
Kroeber, L.
Aristolochia clematitis (Osterluzei)
Pharm. Zentralh., 67 (1926), 246
Léger, E.
Evaluation or standardization of aloes
J. pharm. chim., 3 (1926), 305
Perrot, Em.
Caoutchouc, its history, origin, extraction and production
Bull. sci. pharmacol., 33 (1926), 205

Reinitzer, F.
Investigation of Siamese benzoin
Arch. Pharm., 3 (1926), 131
Rosenthaler, L.
Notes on Flores Cinae
Pharm. Zentralh., 67 (1926), 211
Tschirch, A. V., and Schäfer, H. H.
On stick lac wax
Pharm. Acta Helv., 1 (1926), 9

ALKALOIDS AND GLUCOSIDES.

Bridel, M.
On the presence in almond emulsion of two new ferments, primeverosidase and primeverase
Compt. rend. acad. sci., 181 (1925), 523; through *Bull. sci. pharmacol.*, 33 (1926), 271
Bridel, M., and Picard, P.
On the preparation and properties of monotropitoside
Compt. rend. acad. sci., 180 (1925), 1864; through *Bull. sci. pharmacol.*, 33 (1926), 271
Charaux, C., and Delauney, P.
On the presence of loroglossin in Listera ovata R. Br. and Epipactis palustris Crantz, and some new reactions for this glucoside
Compt. rend. acad. sci., 180 (1925), 1770; through *Bull. sci. pharmacol.*, 33 (1926), 271
Davis
Quinine in cinchona
Pharm. Ztg., 71, 26; through *Drug. Circ.*, 70 (1926), 198
Ferreira, H. M.
Gordin's method for the determination of alkaloids
Arch. med. leg., 1 (1925), 325; through *Chem. Abstr.*, 20 (1926), 1302
Glaser, E., and Thaler, A. C.
The influence of the acid characters of polynitrophenol and nitronaphthol on their ability to form glucosides
Arch. Pharm., 3 (1926), 228
Hérissey, H.
Estimation of asperuloside in plants. Extraction of this glucoside from Galium aparine L
J. pharm. chim., 3 (1926), 353
Koevenagel, and Fried
Ricinine
Ber., 58, 2124; through *Drug. Circ.*, 70 (1926), 196
Machiguchi, E.
Studies on Japanese opium
J. Pharm. Soc. Japan, 529 (1926), 185
Métin
Variations in the alkaloidal content of Aconitum napellus, L
Bull. sci. pharmacol., 33 (1926), 197
Mikó, J., and St. V.
Assay of guarana
Pharm. Zentralh., 67 (1926), 193
Polonovski, M., and M.
On a series of alkaloidal derivatives of attenuated toxicity
Compt. rend. acad. sci., 181 (1925), 887; through *J. pharm. chim.*, 3 (1926), 323
Rouhier, A.
Complimental notes on yagé
Bull. sci. pharmacol., 33 (1926), 257
Rundshagen
Estimation of nicotine in tobacco
Chem.-Ztg., 50 (1926), 42; through *Pharm. Zentralh.*, 67 (1926), 263
Windaus, A., Reverey, G., and Schwieger, A.
Cymarin and strophanthin
Ber. deutsch. chem. Gesellsch., 58 (1925), 1509; through *Pharm. Zentralh.*, 67 (1926), 263
Windaus, A., and Westphal, K.
Oleandrin
K. Ges. Wiss. Göttingen (1925); through *Schweiz. Apoth. Ztg.*, 64 (1926), 148
Zekert, O.
Indian opium
Arch. Pharm., 3 (1926), 237

OILS, FATS AND WAXES.

André, E., and Guichard, F.
Contribution to the study of the oils of American palms. On the butter of Murumuru
Compt. rend. acad. sci., 181 (1925), 228; through *Bull. sci. pharmacol.*, 33 (1926), 271
Dieterle, H.
Contribution to the knowledge of oils in the seed of Datura alba Nees
Arch. Pharm., 264 (1926), 140
Read, B. E.
Bibliography of chaulmoogra oil
China Med. J., 39 (1925), 623; through *Chem. Abstr.*, 20 (1926), 1493
Read, B. E.
Notes on the preparation and use of the ethyl esters from the chaulmoogra oils
China Med. J., 39 (1925), 612; through *Chem. Abstr.*, 20 (1926), 1493

ESSENTIAL OILS.

Anon
Essential oil of Eriostemon myoporoides (DeC.)
Perf. & Ess. Oil Rec., 17 (1926), 131

Anon
Fennel oil
Chem. & Drug., 104 (1926), 619

Hogstad, A., Jr.
Origin, nature and phisiological rôle of the essential oil of American wormseed. III
Am. J. Pharm., 98 (1926), 195

Hogstad, A., Jr.
Some studies on the so-called "Western" oil of American wormseed. I
Am. J. Pharm., 98 (1926), 188

Huerre, R.
Assay of oil of cade
J. pharm. chim., 3 (1926), 314

Konnerth, R. A.
How varied conditions affect some essential oils
Am. Perfumer, 20 (1926), 695; through *Chem. Abstr.*, 20 (1926), 1301

Krastelevski, W.
Essential oil of Andropogon citratus, DC. from Sukhum (Caucasia)
Arb. Chem-Pharm. Inst. Moskaus, 11 (1925), 159; through *J. Soc. Chem. Ind.*, 45 (1926), B340

Krastelevski, W.
Yield of some essential oils from Sukhum (Caucasia)
Arb. Chem-Pharm. Inst. Moskaus, 11 (1925), 163; through *J. Soc. Chem. Ind.*, 45 (1926), B340

Liotta, P.
Oil from leaves and twigs of the lemon tree (petitgrain)
Riv. ital. essenze e profumi, 7 (1925), 107; through *J. Soc. Chem. Ind.*, 45 (1926), B340

Lynn, E. V., Lehman, A., and Cain, R.
The volatile oil of Ledum Groenlandicum
Jour. A. Ph. A., 15 (1926), 263

Netz, C. V.
Determination of the amount of oil in spirit of peppermint
Jour. A. Ph. A., 15 (1926), 278

Paget, H.
Chenopodium oil
Analyst (April 1926), 170; through *Chem. & Drug.*, 104 (1926), 597

Penfold
Oil of Eriostemon
J. Royal Soc. N. S. Wales, 59, 206; through *Chem. & Drug.*, 104 (1926), 597

Pigulevski, G. V., and Vladimirova, V. V.
Formation of essential oil in Pinus strobus
J. Russ. Phys.-Chem. Soc., 56 (1925), 359; through *Perf. & Ess. Oil Rec.*, 17 (1926), 131

Rutovski, B., Winogradova, I., and Koltove, G.
Essential oils of Sochi district (Caucasia)
Arb. Chem-Pharm. Inst. Moskaus, 11 (1925), 118; through *J. Soc. Chem. Ind.*, 45 (1926), B340

Rutovski, B., Winogradova, and Kondratski, A.
Essential oils of the Crimea
Arb. Chem-Pharm. Inst. Moskaus, 11 (1925), 59; through *J. Soc. Chem. Ind.*, 45 (1926), B340

Rutovski, B., Winogradova, I., and Koslov, W.
Essential oils from the Sukhum district (Caucasia)
Arb. Chem-Pharm. Inst. Moskaus, 11 (1925), 93; through *J. Soc. Chem. Ind.*, 45 (1926), B340

Short, W. F.
Oil of Manuka
J. Soc. Chem. Ind. (April 6, 1926)

Sinclair, W. M.
Aldehydes and essential oils from cacti
Perf. & Ess. Oil Rec., 17 (1926), 135

Thoms, H.
Detection of ethyl phthalate in essential oils
Apoth. Ztg., 40 (1925), 196; through *Chem. Abstr.*, 20 (1926), 1493

GENERAL AND PHYSICAL CHEMISTRY.

Bruère, P.
Structure of stable colorimetric salts for estimation of p_H
J. pharm. chim., 3 (1926), 377

Lüers, H., and Weinfurtner, F.
Determining the effectiveness of trade disinfectants
Wchnschr. Brau., 43 (1926), 25–9; through *Chem. Abstr.*, 20 (1926), 1301

INORGANIC CHEMICALS.

Anon
Color reactions of citric, oxalic and tartaric acids with $FeCl_3$-H_2SO_4-pyramidon-resorcin mixture
Schweiz. Apoth. Ztg., 64 (1926), 177

Austen, W.
Quick method for estimation of iodine number with iodine and alcohol
Pharm. Zentralh., 67 (1926), 209

Fridli, R.
On the quantitative estimation of arsenic as metalic arsenic and as ammonium-magnesiumarsenate-(hexahydrate)
Pharm. Zentralh., 67 (1926), 241

Girard, and Fourneau
A new method of great sensitiveness for the detection, separation and estimation of bismuth
Compt. rend. acad. sci. (Nov. 3, 1925); through *Schweiz. Apoth. Ztg.*, 64 (1926), 179

Rae, J.
Testing of spirit of nitrous ether
Pharm. J., 115 (1925), 633; through *Pharm. Zentralh.*, 67 (1926), 248

Shireman, A. F.
Assay of phosphoric acid and the sodium phosphates
JOUR. A. PH. A., 15 (1926), 267

ORGANIC CHEMICALS.

Abel, J. J.
Crystalline insulin
Proc. Nat. Acad. Sci., 12 (1926), 132; through *Chem. Abstr.*, 20 (1926), 1494

Dietzel, R., and Krug, R.
Optical investigation of lactic acid and its anhydride
Arch. Pharm., 3 (1926), 117

Ekkert, L.
Contribution to the reactions of antipyrine, amidopyrine and pyramidons
Pharm. Zentralh., 67 (1926), 196

Fleury, P.
Action of salts of mercury on the veronal series
J. pharm. chim. [8], 2 (1925), 465; through *Chem. Abstr.*, 20 (1926), 495

Herboth, L.
The influence of sodium hydroxide solution on the adsorption of arsenious acid by ferric saccharate
Arch. Pharm., 264 (1926), 181

Hérissey, H., and Cheymol, J.
On the sugars furnished by humic acid
Compt. rend. acad. sci., 181 (1925), 565; through *Bull. sci. pharmacol.*, 33 (1926), 271

Ishio, M.
On the constitution of eleostearic acid
J. Pharm. Soc. Japan, 529 (1926), 228

Keelan, H. S.
A simple test for differentiating between mild and strong silver protein
JOUR. A. PH. A., 15 (1926), 277

Khouri, J.
Uremia and oxalaemia
J. pharm. chim., 3 (1926), 374

Oesterle, O. A. V., and Wander, G.
"Diosmin"
Pharm. Acta Helv., 1 (1926), 3

Rupp, E.
The strength of hydrosulfit preparations
Chem.-Ztg., 49 (1925), 42; through *Pharm. Zentralh.*, 67 (1926), 213

Shimidzu, T.
Action of cyanogen bromide upon quinoline
J. Pharm. Soc. Japan, 529 (1926), 243

Updegraff, H.
Presence of sugar in saliva
Dental Cosmos, 68 (1926), 237; through *Chem. Abstr.*, 20 (1926), 1302

Valentin, H., and Lieber, A.
The distinguishing characteristics of aspirin and acetylsalicylic acid
Apoth. Ztg., 40 (1925), 575; through *Pharm. Zentralh.*, 67 (1926), 212

Vanino, L., and Guyot, O.
Salts of anhydromethylencitronic acid
Arch. Pharm., 264 (1926), 113

CLINICAL AND DIAGNOSTIC METHODS.

Py, G.
Some remarks on the precipitation and estimation of uric acid by means of the copper salt
J. pharm. chim., 3 (1926), 366

ESSENTIAL OILS AND SYNTHETIC PERFUMES.*

BY JOHN GLASSFORD.

We do most things either to avoid pain or to induce pleasure, and, in this paradoxical world of ours, it is through the same five senses that we get what is coming to us or what we go after. Music lovers say that the most sublime heights are reached through music and the sense of hearing, but that is a matter of taste and many of us no doubt would thrill more intensely over a view of the Grand Canyon or Niagara Falls than over the most beautiful symphony ever composed. The

* Address before Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION, March 26, 1926.

pleasures of the sense of smell are secondary or auxiliary to those of sight and hearing, enhancing their enjoyment by a subtle charm, unobtrusive yet insistent, like the delicate touch of flavor which the skilful cook adds to the dainty dish and which we do not notice but would miss greatly were it not there. Then, too, the sense of smell is capable of arousing the most poignant memories of persons and places loved and long forgotten.

There have been several theories propounded in explanation of the act of smelling, the electrical, the vibrational and the chemical. It is the last that now is regarded with most favor. The olfactory nerve is situated in an upper chamber of the nasal cavity, out of the direct line of the air currents produced by breathing. It is covered by both an aqueous mucous and a lipoid fat layer, in both of which an odorous substance must be soluble in order to be perceived. The stimulus is probably produced by a chemical reaction between the osmoceptor of the nerve and the osmophore of the odorous material. The osmoceptor may become exhausted, when the nerve can no longer perceive the odor that exhausted it. This fact is useful in the analysis of perfumes. Let us say, the odor of rose has been detected in a mixture. By smelling oil of rose directly, this odor may be removed as it were from the mixture and other constituents more readily perceived. The sense of smell is the most delicate of all the senses. It is said to be capable of detecting 1/460,000,000 of a milligram of mercaptan, 1/120,000 of a grain of oil of rose, or vanillin in a dilution of 1 to 10,000,000.

Odors are variously classified. Beaunis distinguishes between pure scents which affect only the olfactory nerve, pungent odors which irritate the tactile nerves only, and mixed odors which affect both the olfactory and the tactile nerves. Henning's investigations would indicate that there are but six elementary odors, namely: (1) Spicy, as cloves. (2) Flowery, as rose. (3) Fruity, as apple. (4) Resinous, as turpentine. (5) Foul, as hydrogen sulphide. (6) Scorched, as tar. The most elaborate classification is that of Zwaardemaker. This is as follows:

1. Ethereal or Fruity.
2. Aromatic; (*a*) Camphoraceous; (*b*) Spicy; (*c*) Anise-Lavender; (*d*) Lemon-Rose; (*e*) Amygdaline.
3. Fragrant or Balsamic; (*a*) Floral; (*b*) Lily; (*c*) Balsamic.
4. Ambrosial, as musk and amber.
5. Alliaceous; (*a*) Alliaceous; (*b*) Cacodyl-fish; (*c*) Bromine.
6. Empyreumatic or Burnt.
7. Hiroine or Cheesy.
8. Repulsive, as Acanthus and many narcotic plants.
9. Nauseating or Fetid, as products of putrefaction.

I regard Zwaardemaker's classification as unnecessarily complicated and, in places, illogical. For instance, why should rose and lavender be classified as aromatic rather than fragrant? And surely lemon is fruity rather than aromatic. The most practical classification, in my opinion, is that based on Henning's work with the addition of the pungent odors suggested by Beaunis.

It is possible not only to become accustomed to an odor at first disagreeable, but actually to grow to like it. The odor of opium evolved in its digestion in hot water was at first very disagreeable to me but, later, I became very fond of it. A fellow chemist who worked in a red oil and stearic acid plant used to say that he preferred the odor of the foul fats he handled to that of phenyl acetic aldehyde, a most useful synthetic perfume of hyacinth type. Perhaps there is some truth to the story of the poor boy from the slums who complained of the eggs at the fresh air farm because "they didn't have no smell."

Following the above classifications with modifications we may divide essential oils and synthetic perfumes into the following eight classes:

1. Ethereal or fruity oils, as amyl acetate, amyl valerianate, ethyl butyrate, aldehyde C_{14}, etc.
2. Aromatic oils, as cloves, cinnamon, nutmeg, mace, pimento, calamus, Canada snake root, etc.
3. Camphoraceous oils, as oil of camphor, eucalyptus, rosemary, peppermint, thyme, etc.
4. Light flowery oils, as jasmine, rose, ylang-ylang, bay, etc.
5. Heavy flowery oils, as lily, tuberose, narcisse, hyacinth, etc.
6. Balsamic perfume materials, as tolu, balsam of Peru, benzoin, labdanum, etc.
7. Ambrosial, as musk, ambergris, etc.
8. Pungent oils, as oil of mustard.

Essential oils and other perfume materials are obtained either by mechanical expression, distillation, extraction by means of a volatile solvent, absorption by hot fat or by absorption by cold fat.

Only oils occurring abundantly in the oil-bearing tissues can be economically extracted by cold expression. Practically there are only three of them, orange, lemon and bergamot. Oil of limes can also be thus produced but the distilled oil is preferred. These are the citrus oils, all containing terpenes which readily acquire a rank odor on heating in the presence of air. Recently, however, vacuum distillation in the absence of air has been so perfected that citrus oils of very high quality have been distilled.

By far the greater number of volatile oils are produced by distillation with steam. The steam carries over with it a quantity of volatile oil which is proportional to its molecular weight times its partial vapor pressure at the temperature at which distillation occurs. Nitrobenzol, for instance, boils at 204° C. A mixture of nitrobenzol and water, however, boils at 99° C., and the mixed vapors contain about 20% by weight of nitrobenzol.

Extraction with volatile solvents is applicable to a number of flowers formerly extracted by hot or cold fat absorption, such as violets, roses, orange blossoms, jasmine, cassie and mignonette. The volatile solvent employed is usually a highly purified petroleum ether. The residue left after the evaporation of the solvent is called a concrete. It contains undesirable waxes which are removed by treatment of the concrete with alcohol in which the waxes are insoluble, filtering and evaporating off the alcohol from the filtrate. This leaves a highly concentrated floral essence called a "quintessence" or an "absolute."

Hot absorption is of limited application but is used for the manufacture of certain floral "pomades" such as rose, orange blossoms and lily of the valley; the pomades thus produced are inferior to those produced by cold absorption or "enfleurage a froid" next to be described.

The most delicate perfumes are extracted from the flowers in which they occur, with the least injury to their quality, by absorption by a cold mixture of lard and beef tallow which, of course, has been highly purified. Thin layers of the fat on glass plates are exposed to the flowers in frames for from one to three days; the flowers being changed, in some cases, as often as thirty times. The saturated fat is then extracted with alcohol, the alcoholic extract being strongly cooled to separate dissolved fat and evaporated to obtain the "quintessence" or "absolute," as in the case of the extraction by means of volatile solvents.

It is a peculiarity of certain flowers that they continue to produce their perfume during the process of extraction by cold absorption, thus yielding many times as much essence as can be obtained by processes of extraction which kill the active flower cells. Thus Hesse found that ten times as much perfume is extracted from jasmine flowers by cold enfleurage as by extraction with volatile solvents.

The constituents of essential oils are hydrocarbons, terpenes, alcohols, esters, aldehydes, ketones, phenols and phenolic compounds, oxides and lactones, nitrogen compounds, sulphur compounds and free acids.

The hydrocarbons are of very minor importance as perfume materials though they make up the great bulk of many essential oils. Styrolene occurs in styrax. Of the terpenes, $C_{10}H_{16}$, pinene occurs in oil of turpentine, and limonine constitutes 92% of oil of lemon. Otherwise they are very widely distributed, occurring in oils of hyssop, eucalyptus, savin, marjoram, cardamom, orange, bergamot, dill, caraway, origanum, sage, bay, basil, sandalwood, limes, ginger, patchouli, cade, juniper, camphor, cedarwood, cloves, allspice, cinnamon, copaiba, hops and many other essential oils.

The alcohols are a far more odorous class of compounds than the terpenes: Octyl alcohol of rosy character, laurinic alcohol in lily perfumes, alcohols, C_{10} and C_{12} which are useful synthetics, geraniol in oils of rose, geranium, citronella, ginger-grass, nerol in neroli, linalol in oils of linaloe, bergamot, lavender and ylang-ylang, citronellol and rhodinol in oil of rose, benzyl alcohol in jasmine, tuberose, cassie and ylang-ylang, phenyl-ethyl alcohol in rose and neroli oils, cinnamic alcohol in styrax, balsam of Peru and hyacinth, anisic alcohol in Tahiti vanilla, and terpineol, a cheap but very useful synthetic used in enormous quantities, comprise the principal alcohols.

The esters are mainly compounds of the foregoing alcohols with formic, acetic, butyric, benzoic, cinnamic and anthranilic acids. Methyl anthranilate occurs in oils of neroli, tuberose, ylang-ylang, jasmine and gardenia. Geranyl acetate has an exceedingly sweet odor. It is found in palma-rosa oil, lemon-grass oil, sassafras leaf oil, geranium, petit-grain, neroli, coriander, lavender and numerous other oils. Linalyl acetate is a very important perfume material. It is the essential constituent of oil of bergamot and a very important one of oil of lavender. It also occurs in oils of ylang-ylang, petit-grain, neroli, jasmine, gardenia and many others. Benzyl acetate is an important constituent of oil of jasmine; benzyl benzoate occurs in balsam of Peru and oil of ylang-ylang; menthyl acetate with the alcohol, menthol, composes the bulk of peppermint oil. While not occurring naturally, amyl salicylate is a most important synthetic, useful in the production of perfumes of the orchid and red clover type.

In point of odor value the aldehydes are the most important of all perfume constituents or materials. Though occurring in only minute proportions they nevertheless, usually, give the characteristic note to the oil in which they occur, as is the case of citral in oil of lemon, in which it is present to the extent of only four per cent. The synthetic production of aldehydes in a state of purity has revolutionized the art of perfumery and the manufacture of artificial flavors. Natural flower and fruit oils can now be reproduced with remarkable fidelity with the aid of aldehydes. This was impossible only a few years ago. The most important aldehydes are the aliphatic aldehydes, C_8, C_9, C_{10}, C_{11}, all of rosy or neroli-like

characteristics; C_{12}, having the odor of violet leaves; C_{14}, the peach aldehyde; C_{18}, the strawberry aldehyde; C_{20}, the raspberry aldehyde; anisic aldehyde, of hawthorne character; citral in oil of lemon; benzaldehyde in oil of bitter almonds; cinnamic aldehyde, the principal constituent of oil of cinnamon; phenyl acetic aldehyde, giving the key-note to the odor of hyacinth; vanillin or methyl protocatechuic aldehyde, one of the most important constituents of vanilla beans now manufactured synthetically on a very large scale; and heliotropine or piperinol, a synthetic possessing a powerful odor of heliotrope.

The ketones of importance, although few in number, include the ionones, those very remarkable compounds of violet character resulting from the long and patient research of Tiemann and Kruger. These are among the most important of all synthetic perfumes, and are derivatives of condensation products of citral and acetone or its homologues. Another ketone of great commercial importance, though it is not a perfume material, is camphor, $C_{10}H_{16}O$. Among ketones of lesser importance are carvone, occurring in oil of caraway, and jasmine, an important constituent of jasmine and neroli oils.

Among the phenols are found thymol, occurring in oil of thymone; anethol, in anise oil; eugenol in oil of cloves; safrol in oil of sassafras; and para-cresol methyl ether occurring in oil of ylang-ylang, and also a very important synthetic.

Among the oxides and lactones are coumarin, occurring in the tonka bean, deer's tongue and many grasses, also manufactured synthetically on a very large scale; and eucalyptol in oil of eucalyptus.

The nitrogenous perfume materials include the three artificial musks; musk xylol, tri-nitro-iso-butyl-xylol; musk ambrette, dinitro-butyl-meta-cresol methyl ether; and musk ketone, butyl-xylyl-propyl ketone. Indol, occurring in jasmine oil and skatol, its β-methyl derivative, also come under this classification.

Among sulphur compounds there is worthy of mention diallyl disulphide which comprises 60% of oil of garlic, and allyl iso-thiocyanate or oil of mustard.

Merely for the sake of completeness, benzoic, valerianic, phenylacetic and cinnamic acids are noted; as perfume materials they are of very minor importance.

The various perfume materials that we have considered are like the notes on the various instruments, at the disposal of a composer. They must be properly combined to make a finished perfume. A perfume is like a musical symphony. The various odors of which it is composed are like the instruments of the orchestra. If the instruments are well blended, there is music. If not, there is only a noise. If the odors are well combined, there is a perfume. If not, there is only a smell.

Finished perfumes may be classified as follows:

Colognes and toilet waters of light floral character containing only a small amount of essential oil and designed to be used liberally. Examples of these are Florida Water and German and other colognes which have long been popular.

Perfumes proper are more concentrated solutions in alcohol of perfume oils containing from 8 to 12 ounces of oil per gallon. These may be divided into bouquets and simple odors. The simple odors are named for and consist essentially of the essential oil of one flower, such as rose. This is supplemented and enhanced by traces of other odors. Such a perfume we might liken to a musical solo in which the principal part is taken by some instrument and supplemented by the accompaniment of an orchestra which may be made up of many pieces. The simile is apt in that the ingredients of a finished perfume are often quite as numerous as the number of pieces in a very large orchestra. This is particularly true of the other class of finished perfumes which are called "bouquets" and in which no particular flower predominates. A perfume of this kind is

more difficult to compose than one modifying a simple flower. In the case of the flower, it must not be imagined that the ultimate constituents of the perfume are simple. The only difference is that nature is the perfumer. Oil of ylang-ylang, for instance, contains something like 25 or 30 perfume ingredients which nature has most wonderfully combined to make what the Filipinos have named "The flower of flowers." However, some very beautiful odors have been produced by skilful perfumers, and they deservedly enjoy wide popularity.

I might mention that bouquets might be sub-divided into French bouquets and Oriental bouquets. The French bouquets are of a more flowery character; not necessarily of light flowery character; they may contain heavy floral odors, such as lily, but they are flowery rather than aromatic. Oriental bouquets, on the other hand, contain many perfume notes of an aromatic or ambrosial character, such as sandalwood, amber and musk, amber being, probably, the most prominent.

Perfume materials are used very largely for soap; not the highest quality perfume materials, but a very great bulk, probably a greater bulk than for all other purposes. There is no soap that is not more or less perfumed. Even laundry soaps are perfumed with oil of citronella. For toilet preparations, such as creams and powders, special perfumes are required. In the perfuming of a powder, care must be taken not to use materials which will either oxidize or otherwise deteriorate in odor on exposure to the oxygen of the air on the enormous surface exposed by the particles of powder. Materials which discolor must also be avoided, such as methyl anthranilate, which turns yellow in powder, and indol, one of the constituents of jasmine, which turns red in preparations in which it is used.

Nearly all perfumes require fixatives, or non-volatile materials, to hold the more volatile oils and to prevent their evaporating too fast when the perfume is used. The principal fixative is synthetic amber, which is really an oleoresin of labdanum. Many other resinous bodies are used, however, such as benzoin, tolu, orris, musk, castor, civet, etc.

Time will not permit the discussion of individual oils, but I might say a word or two about the most famous of all perfume materials—otto of rose.

It is said that the otto was first distilled in 1612 in Persia and is first mentioned in the history of the Moguls. At the marriage of Princess Nour-Djihan and Djihan-Guhr, the mother of Nour-Djihan presented the prince with "Essence of Rose Water." The prince called the perfume "Perfume of Djihanguhr" and presented the princess with a 30,000 rupee necklace. Another version of the story is that at the wedding, a rose water canal was constructed in the garden and oil of rose noticed floating on the surface. This was collected and recognized as a most wonderful perfume. Like the oil of ylang-ylang that I have previously mentioned, oil of rose also contains a great many constituents. Among them, I might mention geraniol, citronellol, rhodinol, a paraffin $C_{16}H_{34}$, phenyl-ethyl alcohol, nerol, farnesol, a sesquiterpene alcohol, $C_{15}H_{26}O_1$, eugenol, linalol and nonylic aldehyde. A ton of rose petals yields two-thirds of a pound of otto of rose.

CHARLES E. DOHME LECTURES.

The Charles E. Dohme lectures of this year were delivered by Dr. Walter Ernest Dixon, formerly professor of materia medica and pharmacology at King's College, University of London, and now reader in pharmacology and assistant to the regius professor of physics at the Cambridge University. As is quite generally known the lectureship was founded in memory of the late **Charles E. Dohme,** who was President of the AMERICAN PHARMACEUTICAL ASSOCIATION, 1898–1899. Few, if any, of the A. PH. A. presidents were held in higher esteem by pharmacists.

PHYSICIANS' HOMES.

The American Medical Association has endorsed a campaign for the establishment of three homes for "old and financially insecure" physicians of this country. These will be established in the North, South and Middle West.

UNPUBLISHED DIRECTIONS FOR "ORGANIC SYNTHESES."

The Editors of "Organic Syntheses," an annual publication of satisfactory methods for the preparation of organic chemicals, now have at hand a large number of preparations in addition to those to be included in Volume 6, which is now in press, and in Volume 7, which will soon go to the printer. The following is a partial list of these preparations. Chemists interested in any of these preparations can procure copies from Frank C. Whitmore, Northwestern University, Evanston, Illinois.

Alloxan
α-Aminoisobutyric Acid
Ammonium *d*-α-Bromocamphor Sulfonate
n-Amylbenzene
β-Anthraquinone Carboxylic Acid
Benzoyl-*o*-benzoic Acid
Benzoyl Hydroperoxide
Benzyl Aniline
Biphenyl
Bromal
p-Bromobiphenyl
d-α-Bromocamphor
Bromotoluenes
n-Butyl amine
n-Butyl Carbamate
n-Butyl-*p*-Toluenesulfonate
Butyric and isobutyric Aldehydes
n-Butyryl Chloride
Cacodyl Chloride
n-Caproic Acid
Chloretone
o-Chlorobenzoic Acid
p-Chloromercuri Benzoic Acid
β-Chloropropionic Acid
α-Chlorostyrene
Dehydracetic Acid
Diacetyl Monoxime
3,5-Diamino - 4 - hydroxyphenyl Arsonic Acid
1,2-Dibromocyclohexane
Di-Iodofumaric Acid
Dimethyl Acetal
3,5 - Dinitro - 4 - hydroxyphenyl Arsonic Acid
s-Di-*o*-phenetyl Thiourea
Ethyl Benzoyl Formate
Ethyl Cinnamate
Ethyl Nitrate
Glyceric Aldehyde
Guanidine Nitrate
Hydrocinnamic Acid
Iodobenzene
o-Iodobenzoic Acid
p-Iodobenzoic Acid
p-Iodoguaiacol
Mercury Diphenyl
Methyl - η - aldehydo-octoate
Monochloromethyl Ether
α-Naphthaldehyde
β-Naphthaldehyde
2,3,6-Naphthol Disulfonic Acid
α-Naphthoquinone
β-Naphthoquinone
Nitroacetic Acid
o-Nitroaniline
Nitroguanidine
Paraffin Hydrocarbons
2-Phenyl Benzothiazole
α - Phenyl - β - benzoyl Propionitrile
Phenyl Carbazole
β-Phenyl Cinnamonitrile
Phenylmercuric Acetate
Phenyl Nitromethane
β-Phenyl Propionitrile
Phenyl Succinic Acid
o-Phthalaldehydic Acid
o-Phthalyl Chlorides
Pinene Hydrochloride
Propionic Aldehydes
Pyrrole
α-Pyrrole Carboxylic Acid
Pyromellitic Acid
Resorcylic Acid
Silver *d* - α - Bromocamphor Sulfonate
Sodium *N*-Benzylidene-glycinate
Sodium Isonitrobenzylcyanide
Thienyl ketones
Thioacetanilide
Thioguaiacol
Thiophene
α-Thiophene Arsonic Acid
Thymol Mercury Compounds
o-Toluamide
o- and *p*-Toluic Acids
Tolyl *p*-Toluene Thiosulfonate
m-Tolylene Diamine
Trimethylene Chlorohydrin
Trimethylene Oxide
Triphenyl Amino
Triphenyl Stibine
Viscose

INFORMATION AS TO FOODS AND MEDICINE BY RADIO.

State Departments of Health are arranging talks by well-known scientists on foods, on the treatment of disease or preventing it, by medical men, and there are open subjects affecting the health of the people which come within the province of pharmacy.

Keeping well and getting well are subjects with which everyone must become acquainted, or the expense and loss through disease and sickness will impress the neglect. Both the public and the doctor are becoming better informed and more skilful; these health talks are signs of an educational movement which will have an influence for good and pharmacists should participate in it, because the service of pharmacy is essential thereto. The U. S. Pharmacopœia and the National Formulary speak, in part, for this service.

DEPARTMENT OF BUSINESS MANAGEMENT

Conducted by Paul C. Olsen.*

COMMENTS, QUESTIONS AND SUGGESTIONS ARE INVITED AND WELCOME.

Readers are invited to submit comments, criticisms and suggestions regarding the material which appears in this department. The Editor also will undertake to answer questions regarding general problems of business management. Letters of general interest will be published, but the writer's name will not be revealed without his permission.

SEASONABLE DISPLAYS FOR JUNE AND JULY.

Graduation and wedding gifts	Cameras and photographic supplies
Perfumes, toilet waters, sachets	Film developing, printing, enlarging
Perfume atomizers	Vacuum bottles
Stationery	Talcum powder
Fountain pens and pencils	Mosquito and ivy poison remedies
Hair brushes and combs	Sunburn remedies
Clothes brushes	First aid kits
Manicure and toilet sets	Sponges and chamois

Bath supplies

FURTHER RESULTS OF THE CENSUS OF BUSINESS COSTS.[1]

In this department of the May JOURNAL figures of a census of business costs were published relating to typical operating expenses in 1925 in stores in and around Philadelphia. These figures, while typical, are not by any means the best results reported. On the other hand many stores reported results which were not as good as the typical figures published.

The results of these unusually successful stores have been grouped together to bring out just which expenses they have cut most. The typical figures for these stores are set down in the following table alongside those for stores with results not as good as the average.

	Stores with "above average" profit, per cent.	Stores with "below average" profit, per cent.
Sales	100.0	100.0
Cost of merchandise sold	61.0	67.0
Total operating expenses (divided as below)	24.8	29.3
Salaries (including owner's salary)	16.5	19.5
Owner's salary	9.5	9.5
Rent	4.0	5.5
Light	0.6	0.6
Heat	0.5	0.5
Insurance	0.2	0.2

* Instructor of Merchandising, Wharton School of Finance and Commerce, University of Pennsylvania; Lecturer on Business Administration, Philadelphia College of Pharmacy and Science.

[1] This article presents the first results of the Druco Census of Business Costs and is reprinted from Druco News, March 1926, published by the Philadelphia Wholesale Drug Company. This census is being made for the Philadelphia Wholesale Drug Company by Paul C. Olsen.

Taxes	0.2	0.2
Interest	Negligible	Negligible
Losses from bad debts	Negligible	Negligible
Repairs	0.2	0.2
Depreciation	1.4	1.2
Delivery	0.1	0.1
Advertising	0.6	0.6
Miscellaneous	0.5	0.7
Profit	14.2	3.7
Turnover of merchandise stock (times per year)	2.6	2.8

What This Table Shows:

The stores above the average earned almost 4 times as much net profit as those below the average. How did they do it?

1. The cost of their merchandise was less. This suggests the following causes, all of which probably were taken advantage of to make these stores more profitable.

a. Skilful buying.
b. Purchase of minimum of dead and unsalable items.
c. Minimum waste and loss of stock purchased.
d. Taking advantage of discounts.
e. Selling their merchandise at higher prices.

The justification for selling merchandise at cut prices is that increased turnover and greater volume result, so that in the end the total net profit is at least as much. That is to say, the man who earns a net profit of 4 cents on every dollar of sales and gets eight turnovers a year is making just as much on his merchandise investment as the man who makes a net profit of 8 cents and has four turnovers a year.

From the results reported by drug stores in and around Philadelphia, it is very evident that cut prices do not bring a turnover to justify the lowered margin of profit. To earn a profit on their merchandise investment comparable to that of the unusually successful stores, these stores with a lower margin of profit should have a turnover of at least 10, instead of the 2.8 which they report.

The relation between volume of business and cut prices is discussed in connection with the next table.

2. The expense for salaries in the most successful stores was one-sixth less, although the proprietor paid himself just as much. This suggests that the proprietor was able to conduct his business with less assistance, and this no doubt helped to increase the profits of the business, because success in the retail drug business depends to such a large extent on personal service. It suggests also that the proprietor of the unusually successful store was able to obtain better results and larger sales from the help he had.

3. Rent is one-fourth less, proportionately, in the most successful stores. This indicates that better advantage has been taken of the location, or, in the case of the less successful stores, that a location has been chosen which is too expensive for the amount of business possible to be done.

Do Profits Increase as Sales Increase?

An analysis of the results reported by stores of different sizes was made to learn if large stores are more profitable proportionately than small stores. This

analysis is especially important to the man who is working to try to increase the size of his business.

	Typical results of stores with sales under $20,000, per cent.	Typical results of stores with sales $20,000 to $40,000, per cent.	Typical results of stores with sales over $40,000, per cent.
Sales	100.0	100.0	100.0
Cost of merchandise sold	61.0	64.0	64.5
Total operating expenses (divided as below)	32.0	27.8	24.2
Salaries (including owner's salary)	22.5	19.5	16.5
Owner's salary	15.0	9.5	5.0
Rent	5.5	4.0	3.5
Light	0.7	0.5	0.6
Heat	0.6	0.5	0.3
Insurance	0.2	0.3	0.2
Taxes	0.2	0.2	0.1
Interest	Negligible	Negligible	Negligible
Losses on bad debts	Negligible	Negligible	Negligible
Repairs	0.2	0.2	0.2
Depreciation	1.2	1.4	1.4
Delivery	0.1	0.1	0.1
Advertising	0.3	0.6	0.8
Miscellaneous	0.5	0.5	0.5
Profit	7.0	8.2	11.3
Turnover of merchandise stock (times a year)	2.6	2.5	2.8

What This Table Shows:

1. The rate of profit is over 60 per cent greater in the largest stores than it is in the smallest stores. That is to say, as a store's volume of business increases, profits increase not only as a result of this increased volume but, in addition, because of the greater rate of profit in larger stores.

2. There is very little difference in the merchandise turnover of large and small stores. This means that as the volume of business increases the investment in merchandise increases proportionately, probably the combined result of a wider variety of goods sold and a somewhat larger stock of each item. This also indicates that the typical largest stores do not build their volume to any extent on quick turnover and low margins.

3. Cost of goods is lowest in the smallest stores, a fact undoubtedly caused to a considerable extent by the proprietor buying merchandise as raw materials and in his spare time manufacturing it into finished products. As the size of the business increases the time available to do this becomes less and, as a result, he buys many preparations which, formerly, he manufactured.

4. Salaries decrease proportionately as the size of the store increases. As a proprietor increases the size of his business he is able to employ his assistants more efficiently. Every druggist is familiar with examples of this. For instance, in a small store the proprietor himself takes care of the soda fountain, while in larger stores a boy or girl does the work for $15 or $20 a week. The cost of soda-fountain labor is thus greatly reduced.

5. The typical largest stores pay one-third less for rent than the corresponding smallest stores. Rent is usually a fixed expense; these figures indicate that some proprietors have been able to do more business than others in a given location.

On the other hand, it is apparent also that the lowest rent is not always the cheapest. A store may do three times the business in a $200 a month location than it would in a $100 a month location.

6. The largest stores evidently seek business the most energetically because they spend almost three times as much proportionately for advertising. The force of this comparison is seen when it is realized that the typical smallest store doing, say, $15,000 a year, spends $45 a year, while the typical largest store, doing, say, $50,000 a year, spends $400 a year, almost nine times as much.

NEIGHBORHOOD, SUBURBAN, OUT OF TOWN AND TRANSIENT STORES COMPARED.

The table below is of interest to the man who is considering buying a store or opening a new store.

	Neighborhood stores, per cent.	Suburban stores, per cent.	Out of town stores, per cent.	Transient stores, per cent.
Sales	100.0	100.0	100.0	100.0
Cost of merchandise sold	61.0	65.0	63.0	66.0
Total operating expenses (divided as below)	31.9	26.9	28.8	23.0
Salaries (including owner's salary)	22.5	19.5	19.5	16.5
Owner's salary	13.5	9.5	12.0	5.5
Rent	5.5	3.0	5.0	2.5
Light	0.7	0.6	0.5	0.6
Heat	0.4	0.5	0.4	0.3
Insurance	0.2	0.3	0.3	0.2
Taxes	0.2	0.2	0.2	0.1
Interest	Negligible	Negligible	Negligible	Negligible
Losses from bad debts	Negligible	Negligible	Negligible	Negligible
Repairs	0.2	0.2	0.2	0.1
Depreciation	1.1	1.2	1.4	1.4
Delivery	0.3	0.3	0.2	0.1
Advertising	0.3	0.6	0.7	0.6
Miscellaneous	0.5	0.5	0.4	0.6
Profit	7.1	8.1	8.2	11.0
Annual turnover of merchandise stock (times)	2.6	3.0	2.0	3.0

The most important variations are in cost of merchandise, salaries, rent, profit and turnover. To the druggist already established, these variations are only of academic interest; they give him an idea of the advantages and limitations of various classes of his competitors.

CHARGE BUSINESS.

One store in five reported that they did 5 per cent or more charge business. The losses from bad debts of these stores averaged one-tenth of one per cent of total sales or about 1 per cent of charge sales. This loss is lower than that generally reported for other lines of retail business.

HOW LARGE CAN A DRUG STORE GROW?

Oliver Parker was ready to buy an automobile. Years of unending effort had brought the profits of his business to the point at which he felt he could afford

an automobile. Mr. Parker's drug store had stood for many years in the growing Pine Street section of down-town Seattle. Where once it had been on the edge of the best shopping district it was now in the very heart of it. Accordingly, the store had prospered.

Mr. Parker's success was deserved. He had worked unceasingly to earn the confidence of physicians and to-day he believed that he did a larger business in prescriptions and sick-room supplies than any other store in the State of Washington. The growing demands of his business had necessitated his putting back into it every cent he could spare. Until now he had never felt that he could take enough from the business to buy an automobile.

He had often wished for one, especially as he waited at Third Avenue for the Capitol Hill car which took him up Pine Street to his home. As the little car bounced up Pine Street he had gazed admiringly at the shiny new machines in the display windows he passed. He thought he liked the Buick, but then there was a certain sturdiness about the Studebaker. He wondered if the Jordan could be as good as its advertising. Now the happy time had come for the transition of hopeful wishes to the reality of purchase. He would investigate the claims of Jordan and Chrysler and Nash and Reo and a dozen other names which were vaguely familiar to him. Not since he had driven his father's high perched Rambler had he had his hands on an automobile steering wheel.

Eager salesmen soon beset him. Some took him for rides. Others loaned him cars and urged him to test their power on the East Madison hill or along the straightaways of the Valley road. Years of buying experience in his own business had taught him to appraise values with care and exactness. Buying an automobile was a new experience and, therefore, required much time and study.

Fully four weeks passed before he made a decision. Many cars had qualities that he liked, but not one seemed to have everything that all the others had. That seemed as impossible as to see both sides of a penny at the same time. He laughed at his own indecision. It reminded him of the countless times he had fidgeted from one foot to the other while waiting for a fussy customer to make her selection from three kinds of cologne.

He mentioned his little joke to Jack Rogers—salesman for the car he bought.

"You know," said Rogers, "there are mighty few things that people shop for in a drug store. Once in a while—perfumes, but with most of the things you handle the article is sold before the customer comes in the store. Either that or they are bought on the spur of the moment, as a result of some display or suggestion of yours.

"With us, it's different. Every customer is a shopper. At least 9 out of 10 people who enter your store buy something, while with us, not one person in a dozen who comes in here buys anything."

"How can you afford such an expensive location if that is so?"

"We sold over 400 cars last year. That's a gross business of over $600,000."

Mr. Parker was startled. He thought of all the effort and skill it had taken to build his own business from $12,000 a year to nearly $90,000. This had been the work of 15 years. Here was a business, which in three years had grown from nothing to a volume almost seven times the size of his.

If an automobile agency could build such a volume in so short a time, why

couldn't a drug store do it—especially a drug store with the reputation of his, and located in the heart of Seattle's smartest shopping district.

Jack Rogers must have divined Mr. Parker's thoughts. He said slowly, "Aren't you wondering why you don't do a volume as large as ours?"

"I would like to know."

"Look at it this way, Mr. Parker. Suppose you do a business of $300 a day and your register shows you that you have waited on about 600 customers. That means the average sale was 50 cents. Of course some people spent more, but you know also that others spent less, so the average figures about 50 cents.

"How much thought does a person give to making a 50-cent purchase? Not much. Don't misunderstand me. Your store is so attractive and so well located that people will even go out of their way to buy from you. They know that the merchandise you sell them will be right and that your service will be letter perfect.

"But there's a limit to how far people will go out of their way to buy from you. They may make a special trip to have a prescription filled or to buy an air cushion, but the staples—peroxide, razor blades, soap—they will buy at the most convenient place. And, as Seattle is a city scattered over a great many square miles, that convenient place isn't always your store. People may prefer to buy their staples from you, but the size of the purchase—averaging, as we said, about 50 cents—doesn't warrant them in exerting a great deal of thought or effort in deciding where to buy.

"That's the thing that limits the amount of business one drug store can do. That's the thing that makes your business different from the automobile business. You have spent four weeks and have done a lot of shopping around before you spent $1600 for an automobile. Women do the same thing when they are buying fur coats or oriental rugs, but their every-day small purchases are made at the most convenient place. That's why these every-day staples are called convenience goods."

Even the lure of cut prices cannot build a volume of business in a single drug store sufficient to counterbalance the loss of profits which cut prices entail. The possibility of saving even 10 or 11 cents on a 50-cent purchase does not bulk sufficiently large in the minds of many people to make them go far out of their way to make the saving.

It is thus apparent that even for drug stores located in the busiest sections of the largest cities there is a limit to the amount of business that can be done in an individual store. This is the result of a cause beyond the control of the proprietor; the cause is the character of the merchandise sold in retail drug stores.

GOVERNMENT IN BUSINESS.

Governor Ritchie, of Maryland, in an address at the recent meeting of the U. S. Chamber of Commerce, arguing for more business in government and less government in business, emphasized the point that if this desirable consummation is to be brought about it must come through recognition by business that it has duties and responsibilities as well as rights and privileges. If business would be free of many of the restrictions which are placed upon it by legislation and rid of many of the annoyances with which it is harassed by administrative bureaus, it must be prepared to eliminate the necessity for them by its own fair dealing.

THE SEVENTH REMINGTON HONOR MEDAL AWARD.

The presentations of the Remington Honor Medal have been prompted by different estimates, and each one of those honored has to his credit outstanding achievements in behalf of pharmacy, and this was pointed out in the analysis very interestingly made by President Clyde L. Eddy of the New York Branch, A. PH. A. The brief references by the latter will serve as concise records for future awards; in paying tribute to all, Mr. Eddy also indicated the varying services which had qualified them for the award. Dr. H. A. B. Dunning has contributed to the science of pharmacy as a pharmacist, but the outstanding qualification is preëminent as an endeavor for the advancement of pharmacy. Few had dared to hope for that which was made possible by the medalist of 1926.

The interesting ceremonies, preceded by a banquet at Hotel Pennsylvania on May 12, were directed by the founders of Remington Honor Medal—the New

The Remington Honor Medal and the Medalist—H. A. B. Dunning.

York Branch A. PH. A. About one hundred guests came to honor Dr. Dunning and the happy event was attended by Mrs. Dunning, a son, and other members of the family. Telegrams and letters of congratulation from prominent pharmacists, who were unable to attend, were read, and among them were messages from all pharmaceutical organizations of Baltimore and Maryland. While these were expected they evidenced the esteem and fraternal regard of those with whom the honored guest has been associated, and the tributes of associates and employees testified of their affection and esteem.

President L. L. Walton, of the A. PH. A., spoke of Dr. Dunning's work in and for Associations, stressing his faith in the mission of pharmacy, which was largely responsible for the services he had rendered to pharmacy.

Dr. E. L. Newcomb, who has supported the efforts of Chairman Dunning in publicity work and promoting the campaign for funds, dwelt on the latter's ability as an organizer which made the success of the campaign an accomplishment.

Dr. A. R. L. Dohme related experiences from the life of his fellow townsman and attributed his success to persistence—always sticking to a worth-while problem until he had solved it. In connection with some of these he spoke of the work at Johns Hopkins University and in his own laboratories for and with research workers of note.

Nathaniel Nicolai speaking of "Dunning the Man" brought out the charac-

teristics which were responsible for his development—"nothing he liked so well as tackling difficulties," he said. Mr. Nicolai closed his remarks by saying: "The qualities of Dunning are courage, energy, vision, initiative, tenacity of purpose, executive ability and generosity. We judge a tree by its fruits. We know a man by his works."

Dr. Jacob Diner presented the medal and in well-chosen happy words congratulated the recipient and the Committee for making the selection. He stressed the altruistic side of pharmacy, of which Dr. Dunning is a representative exponent.

Dr. Hugo H. Schaefer, whose suggestion prompted the founding of the Remington Medal, was present at the well-arranged and successful occasion. He has recently completed his studies at the University of Berne.

The Medalist in responding and accepting the Remington Honor Medal said in part:

"I know that you will realize it is only natural for me to be pleased and gratified because of the nice things said about me this evening, however undeserved the commendations may be.

"I can assure the Remington Honor Medal Committee and my fellow pharmacists, whom they represent, that I fully understand and appreciate the high honor which they have conferred upon me, through my selection as the recipient of the Remington Medal. There is no greater honor, in my judgment, within the gift of pharmacy and I am correspondingly grateful.

"The New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION is to be commended for its initiative and enterprise in establishing this splendid memorial to a great leader in pharmacy and, consequently, a great leader in the world's work. If we are kept reminded of the great work of others, we are stimulated to attempt greater things and it is only through ambition that progress results; without progress, we become decadent.

"It seems to me that there never has been a time in the history of pharmacy when leadership was more needed, for the problems to be met are perhaps more difficult and intricate than ever before. It is, therefore, fitting that in honoring one of our great leaders, who gave so much of himself to pharmacy, we recognize our own obligation to give something of ourselves to the service of our calling, so that it will fulfill its proper mission and obtain the recognition which it so richly deserves. It sometimes seems to me that we pharmacists are not so self-respecting as we should be; it is only in proportion to our respect for ourselves that we impress upon others respect for us. We give, I believe, a service to humanity which is not excelled by the representatives of any other calling. I speak not only of the evident service so continuously available to the public through retail stores, corner or otherwise, distributed throughout the country, which offer shelter from rain and sun, resting places, free services, cleanly and wholesome surroundings, courteous attention and helpful advice, but also of the services of highly trained and technically educated, intelligent men and women who dispense potent drugs and chemicals and powerful remedial agents with the knowledge and intelligent care required to safeguard their patrons. Until the drugless era arrives, and that does not seem to be in immediate prospect, the lives of the people of the country can be said to be in the hands of the druggists to a far greater degree than in those of any other class, profession or trade. If the public but realized that in every

drug store there are constantly at hand, literally, hundreds of dangerous drugs, concerning which the druggist must have a full knowledge, not only of their individual properties, but when they are mixed together, and that the druggist must be and is constantly on guard to insure the dispensing of the proper drugs, in the proper doses and under the proper conditions so that the life and health of his patron are safeguarded, greater recognition and appreciation would be accorded pharmacy.

"When I think of the great services of such men as Remington, Procter, Maisch, Caspari, Rice and other great leaders and the service of each individual, self-respecting pharmacist, and the small recognition accorded him, I can reach but one conviction—we are poor advertisers. Let us, then, honor our great men as other professions do. Let us advertise ourselves and our service. This brings to mind the Pharmacy Headquarters Building project and its great purpose. I have talked and written so much about this great enterprise for the benefit and service of pharmacy and humanity that I hesitate to impose upon you at this time. You know that the Pharmacy Headquarters Building is being promoted by the AMERICAN PHARMACEUTICAL ASSOCIATION and will be conducted under its auspices for the benefit and service of all pharmaceutical interests. It has no intention of assuming any prerogatives of the National associations, but to serve and coöperate with them, through the development of a great National Bureau, the establishment of a museum, library and research department. The Publicity Bureau intends not only to disseminate knowledge to druggists throughout the country, develop propaganda to the public of an educational character, which will result in a better understanding of the great service which is offered and given by the druggists to their patrons, but to extend other services to all phases of drug interests, such as have been so frequently discussed that it is unnecessary to repeat them.

AN ANNOUNCEMENT.

"All of these statements which I have just offered to you represent an old story, I am quite sure, but I have some new information for your attention. It might be called an announcement. The Pharmacy Headquarters Building is an assured fact, for the Pharmacy Headquarters Building Campaign Committee has in hand sufficient funds to begin the building, enough pledged to complete it, and we are convinced that so soon as a site is selected and the building is begun, not only will the wealthier interests in pharmacy, or associated with it, come forward with sufficient additional contributions to endow its operations, but the retail druggists of smaller means, who have not subscribed, will do so. Our Campaign Committee has brought to the attention of the Executive Committee of the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION our conclusion that the Council should recommend to the ASSOCIATION at the September meeting in Philadelphia, plans for voting on the location of the building, and we hope that they will take this action.

"The Headquarters Building Committee, the Campaign Committee and the Building Plans Committee are all in coöperation and in accord and all of our plans are in good shape and we are ready for action. We need more funds to represent complete success, but we have enough to justify, in our judgment, a forward movement towards our goal."

THE DEPARTMENT OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY

M. N. Ford, President, Columbus, Ohio. J. W. Gayle, Treasurer, Frankfort, Ky. Edw. H. Walsdorf, Chairman of Executive Committee, New Orleans, La. H. C. Christensen, Secretary, 130 N. Wells St., Chicago, Ill.

ACTIVE MEMBER STATES.

Alabama	Iowa	Montana	South Carolina
Arizona	Kansas	Nebraska	South Dakota
Arkansas	Kentucky	Nevada	Tennessee
Colorado	Louisiana	New Hampshire	Texas
Connecticut	Maine	New Mexico	Utah
Delaware	Maryland	North Carolina	Vermont
D. of Columbia	Massachusetts	North Dakota	Virginia
Florida	Michigan	Ohio	Washington
Georgia	Minnesota	Oklahoma	West Virginia
Idaho	Mississippi	Oregon	Wisconsin
Illinois	Missouri	Pennsylvania	Wyoming
Indiana			

THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY HOLDS EXECUTIVE COMMITTEE MEETING.

The meeting of the Executive Committee of the National Association of Boards of Pharmacy, which was to have been held on April 12 and 13, but postponed because of illness of the Secretary, was held on May 3 and 4. Those present were Chairman Edward H. Walsdorf, W. P. Porterfield, J. W. Gayle, President M. N. Ford and Secretary H. C. Christensen. Word had been received from H. Lionel Meredith, junior member of the Committee, that he did not consider himself eligible to serve on the Committee because of his resignation from the Maryland Board of Pharmacy and removal to Florida. All expressed regret that Mr. Meredith was not present.

The members of the Committee made a thorough survey of the Secretary's office at the Monday morning session and were pleased with the general appearance and ample facilities of the office, designed and equipped for handling not only the present demand but an increasing volume of work, as the organization grows. The members of the Committee were particularly impressed by the neat and orderly arrangement of files for correspondence, journals, information about laws, examination questions, college of pharmacy bulletins, State Board and Association reports and a wealth of information and statistics, easy of access, on all branches of pharmacy. A library consisting of about 500 volumes of text and reference books relating to pharmacy, all indexed and catalogued for quick reference, is another source of useful information.

The Committee convened in formal session on Monday afternoon at 2 o'clock. The first order of business was a checking of the books of the Association and an analysis of receipts and expenditures for the 10-month period beginning July 1, 1925, and ending April 30, 1926, as follows:

Cash on hand June 30, 1925—Secretary's account		$ 7,230.78
Funds on hand June 30, 1925—Treasurer's account		9,897.86
Total balance on hand June 30, 1925		$17,128.64

RECEIPTS.

1185 Reciprocity Blanks at $15.00	$17,775.00	
1 Reciprocity Blank reinstated at	5.00	
46 State Dues at $25.00	1,150.00	
1 State Dues at $15.00 (N. Y., associate)	15.00	
14 N. A. B. P. Honorary Certificates at $2.00	28.00	
Interest on checking account—Secretary	128.65	
Interest on savings account—Treasurer	187.19	
Interest on Government Bonds—Treasurer	42.50	
Miscellaneous Income—Secretary	125.00	
		19,456.34
		$36,584.98

DISBURSEMENTS.

Approved vouchers paid by Treasurer		15,394.94
Total balance on hand April 30, 1926		21,190.04
Secretary's account	$ 9,687.12	
Treasurer's account	11,502.92	
	$21,190.04	

Receipts for the corresponding 10-month period, 1924–25, totaled $16,966.73, showing an increase in income of $2489.61 for this period.

After carefully checking the expenditures for the 10-month period, the Committee considered that expenses had been kept well within the budget and, after a careful figuring of the probable receipts and expenditures for the remaining two months of the fiscal year upon the same basis as the ten months just passed, it was estimated that the Association would show an increase of approximately $3000.00 in its working fund.

Looking forward to the N. A. B. P. Convention to be held in Philadelphia Monday and Tuesday, September 12 and 13, matters pertaining thereto were taken up, and those present were unanimous in urging that every member State Board of Pharmacy send delegates to this convention. A tentative program was outlined, which will be prepared and sent to members later. In view of the large number of conventions that will be held in Philadelphia this year, due to the Sesqui-Centennial, causing a crowded condition of hotels, it was suggested that members who expect to attend the convention should make hotel reservations at as early a date as possible. The Bellevue-Stratford Hotel, Philadelphia, will be convention headquarters. In making room reservations, delegates should specify the number of days they expect to remain. Attention also was called to the fact that the first general session of the convention of the AMERICAN PHARMACEUTICAL ASSOCIATION will be held Tuesday evening, September 13, and this convention will then continue throughout the remainder of the week. The Bellevue-Stratford Hotel will also be headquarters for the N. A. R. D. Convention to be held during the week following, Monday, September 19 to 24 (Saturday), inclusive. This gives opportunity

to those attending the N. A. B. P. and A. PH. A. conventions to remain over for that of the N. A. R. D.

A matter discussed at some length was the plan proposed by Mr. Hunter of the Florida Board last year at a meeting of District No. 7—the proposition that duplicate examination records of member States be supplied to and preserved in the office of the Secretary of the National Association of Boards of Pharmacy. It was pointed out that examination records have from time to time been destroyed by fire and otherwise in a number of States, often causing great inconvenience to the individual boards and in arranging for reciprocity for applicants. The filing of duplicate records in the N. A. B. P. office would make copies of lost or destroyed records available through that office, thus overcoming these difficulties. This same matter was discussed at District Meeting No. 6 held in San Antonio, Tex., in January, and unanimous approval given thereto and a recommendation made that the "Hunter Plan" of preserving duplicate board records be taken up in detail at the next annual convention. This recommendation was concurred in by the Executive Committee.

After further discussion and consideration of various routine matters, the Committee adjourned to meet in Philadelphia at the Bellevue-Stratford Hotel, the evening of September 11.

GENERAL NEWS ITEMS.

COLORADO ATTEMPTS COLLEGE PREREQUISITE AND OTHER CHANGES IN PHARMACY LAW.

It is announced that drafts of amendments to the Colorado Pharmacy Law will be presented to the State Association for approval at its meeting in Boulder in June, which include the following:

Require graduation from an approved school or college of pharmacy for entrance to examination and registration as Pharmacist, excepting that non-graduates who are registered as Apprentices or Assistants, prior to the law becoming effective, will be exempted from the graduate in pharmacy requirement and allowed to take examination and, if successful, granted registration as Pharmacists, provided they qualify within four years after the graduate in pharmacy law becomes effective;

Defining a pharmacy or drug store;

Restricting the ownership of a pharmacy or drug store to registered pharmacists;

Providing for permits to practice for applicants for reciprocal registration while application is pending;

Limiting the time of employment to 132 hours in a 2-week period and forbidding any person to sleep in a pharmacy or drug store;

Prohibiting the use or exhibit of the title "drug store," "pharmacy," or "apothecary" or any combination of such titles or description of like import or any other term designated to take the place of such title, at or by places which are not pharmacies or drug stores with duly registered or licensed pharmacists in charge;

Extending the jurisdiction of the Board of Pharmacy to all towns, cities and rural communities of the State, regardless of size;

Increasing the annual renewal fee for registration to $3.00—$1.00 of which is to go to the Colorado State Pharmaceutical Association;

Requiring that there shall be kept in every pharmacy or drug store a copy of the latest revision of the United States Pharmacopœia and the latest revision of the National Formulary.

It is expected that other features will be added and possibly some changes made when the tentative drafts are submitted to the State Association.

STATE BOARDS OF PHARMACY NEWS ITEMS.

Delaware.—James W. Wise, of Dover, former Vice-President of the Delaware Board of Pharmacy, has been made President of the Board, succeeding George W. Rhodes of Newark. Thomas H. Cappeau of Wilmington has been elected Vice-President.

District of Columbia.—The Board met on April 8, 9 and 10 with the largest class of candidates for registration in its history. Fifty-one presented themselves for examination for registered pharmacists of which only seven were successful.

The following were registered through reciprocity: Vincent Giampietro, Wm. Frederick Downey, Clarence Pross, Harry L. Troxel, all of Maryland, Talmage B. Tribble, Alabama, Harvey M. Fleming, South Dakota and Joseph A. Moore, Tennessee.

One, John Franklin Owen, presented a sworn statement representing himself as being a registered pharmacist of Ohio and on the strength of this was granted a permit to practice pending reciprocity. On investigation, he was found to be misrepresenting himself. Following his arrest he pleaded guilty and paid a fine of one hundred ($100.00) dollars. His present whereabouts is unknown.

The Board recently stopped the sale of Aspirin in a department store. A ruling of the Corporation Counsel was sought on the subject and he approved the action taken and authorized the Police Department to make an arrest with the idea of making a test case. We are looking forward with interest to the outcome of the case.

H. R. 12017 now before Congress seeks to amend our present pharmacy law. The important features of the Bill are a graduate in pharmacy prerequisite clause and a provision for re-registration of all registered pharmacists every three years. The amendment has the endorsement of the Commissioners of the District, the Health Officer, and the local Retail Druggists Association. With this coöperation, we feel that there will be little, if any, opposition when the Bill reaches the floor for action.

Florida.—W. D. Jones, Jr., of Jacksonville, has been appointed attorney of the Board to succeed J. C. Calhoun of Palatka.

Maryland.—J. Fuller Frames, of Baltimore, who was first appointed to the Board in 1911 and who succeeded H. Lionel Meredith as President when the latter resigned from the Board, was reappointed by the Governor on April 26th, on recommendation of the Maryland State Pharmaceutical Association. The office of Treasurer which he held has been turned over to Robert L. Swain of Baltimore, who is now Secretary-Treasurer.

Massachusetts.—The Board of Registration in Pharmacy advocates legislation requiring graduation from a recognized school or college of pharmacy as a needed qualification for examination and registration as a pharmacist, to properly safeguard the public. In a recent report, it calls attention to the inadequacy of a drug-store apprenticeship in preparing a candidate to practice pharmacy. The proprietor may neglect giving careful training along professional lines, but there is always the danger of a student cramming for an examination and "getting by" with the result that a man with little knowledge of pharmacy and some experience behind the soda fountain and patent medicine counter may become a licensed pharmacist. The Board holds that college of pharmacy graduation would raise the standard of pharmacy in the State and overcome this danger.

Minnesota.—John Nelson, of Lake Park, has been elected President of the Minnesota Board of Pharmacy to succeed Edwin A. Brown of Winona. At a recent meeting, thirteen candidates, as a result of passing examinations, were registered as pharmacists.

Ohio.—The Board held an examination on April 6 and 7. Fifty-seven candidates appeared for examination for registered pharmacists and thirty-seven were granted certificates. Twenty-two candidates applied for assistant registration and twenty-one were granted certificates.

Reciprocal registration was granted to the following: Harry E. Ringler, Weller C. Irwin, Ralph C. Forrest, Louis Weiner, George H. Cook and James McClaren, all of Pennsylvania; Newton L. Eudaly, of Arkansas; John N. Hanna, of Florida; George W. McChane, of Iowa; Edward J. Comerford, of Illinois and Millard Williams, of Kentucky.

The Board refused to renew the pharmacist certificate of Armand G. Gardos, now known as George Armand Gafford, of Cleveland, because he had been convicted of felony.

The next examination will be held in Columbus, June 22, 1926.

Pennsylvania.—The Board concluded its quarterly meeting at Cambridge Springs on April 27th, where the members met—with Chairman Charles C. Campbell of Pittsburgh presiding—to rate examination papers and assemble the grades of over 300 candidates who qualified for examination for registration as Pharmacists and Assistant Pharmacists at the examinations held recently in Pittsburgh and Philadelphia.

During the meeting the Board adopted resolutions presented by member Henry W. Merritt, relative to the retirement of Secretary Lucius L. Walton.[1]

South Carolina.—A. Clyde Ellerbe, of Florence, has been elected Chairman of the South Carolina Board of Pharmacy to take effect in July, when the term of C. H. McMurray of Abbeville, the present Chairman of the Board, expires. A new member to fill the vacancy on the Board will be elected by the Association in July.

Virginia.—The term of C. D. Fox of Roanoke, Va., expired on March 1, 1926, and J. C. Kearfott of Martinsville was appointed for a term of five years to succeed Mr. Fox. J. C. Kearfott is the son of the late C. P. Kearfott, who served as a Board member in Virginia for some fifteen years or more.

The Board held its annual meeting in Richmond on April 28th. No examinations were conducted at that meeting. The officers of the board were all reëlected, as follows: W. L. Lyle, Bedford, *President;* H. C. Littlejohn, Leesburg, *Vice-President;* and A. L. I. Winne, Richmond, *Secretary-Treasurer.*

Washington.—Charles Young, of Centralia, has been appointed a member of the Examining Committee of the Washington Board to succeed Homer L. Dean, of Everett.

Wisconsin.—The Board held one of its quarterly meetings in Madison during the week of April 19. Of the 134 candidates who appeared for examination, 72 took examination for Registered Pharmacist and 37 were successful; 44 out of a class of 62 were granted Assistant registration.

At this meeting, G. V. Kradwell, of Racine, was elected President and H. G. Ruenzel, of Milwaukee, was reëlected Secretary.

Dates for examinations were announced as follows: Beginning with the third Monday and continuing several days in each of the months of July and October 1926, and January and April 1927.

On Friday, April 23, members of the Board, members of the Faculty of the School of Pharmacy of the University of Wisconsin; E. G. Raeuber, of Milwaukee, Secretary of the State Pharmaceutical Association; E. S. Hebberd, Chairman of the Legislative Committee and H. C. Christensen, Secretary of the National Association of Boards of Pharmacy, met and discussed ways and means of aligning Wisconsin with surrounding States by securing a law for that State which will include graduation from a recognized school or college of pharmacy as one of the qualifications for entrance to examination for registration as a Pharmacist. It was decided to prepare a draft for such a law for consideration at the meeting of the State Association, to be held at La Crosse on June 22–24, and then present the bill to the next Legislature, with the united support of all the interests of the State in any way connected with pharmacy.

THE PRIESTLEY MEDAL.

The Priestley Medal is to be presented to Dr. Edgar Fahs Smith, for many years head of the University of Pennsylvania, at a ceremony in Philadelphia in connection with the fiftieth anniversary of the founding of the American Chemical Society, September 6–11.

The Priestley Medal is given for outstanding achievement in chemistry. It is awarded every three years, the last recipient having been Ira Remsen, President Emeritus of Johns Hopkins University.

---

[1] See p. 390, May JOUR. A. PH. A.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

(I deem it a significant fact that two colleges of pharmacy—the College of Pharmacy of Ohio State University, and the College of Pharmacy of the University of Minnesota—have decided to go to a four-year minimum course. Our three-year minimum course went into effect last September and practically all of the schools of pharmacy still have two-year students in the process of completing courses. Surely the time is not far distant when every college of pharmacy will give serious thought to the advisability of eliminating all below the four-year course. I believe Deans Dye and Wulling are to be congratulated on the steps that their institutions have taken. I am sure that all who are interested in pharmaceutical education will be interested in the following article by Dean Wulling.—C. B. JORDAN, *Editor*.)

MINNESOTA GOES ON A FOUR-YEAR MINIMUM DEGREE BASIS.

BY FREDERICK J. WULLING.

At the April meeting, the Board of Regents of the University of Minnesota took action to the effect that, after the close of the University year 1928–29, that is June 30, 1929, no degree be granted in Pharmacy for less than four years of College work.

This means that the present four-year course leading to the degree Bachelor of Science in Pharmacy will become the minimum degree course. The degree Pharmaceutical Chemist will not be granted after June, 1929. That degree has heretofore been given for a minimum of three years of technical work in pharmacy. Those who enter next fall (September 1926), may still become applicants for that degree. After that those desiring a degree in pharmacy must complete the present four-year course. No changes will be made in the content of that course. The forty-five academic credits included in the course may be taken as heretofore in the College of Science, Literature and the Arts. The forty-five credits can be completed in one college year. Very likely an arrangement will be made whereby students will be permitted to complete the forty-five academic credits during the first two years of the four-year course concurrently with pharmaceutical work.

The action of the Regents puts no obligation upon students to remain for four years. Students who can meet the general University requirements for admission, may, as heretofore, remain for a lesser number of years than four, but they will not receive degrees. Those who remain long enough to meet the State Law requirements may ask for the usual certificate to the State Board of Pharmacy in case they desire to present themselves for the State Board examinations.

The action of the Regents was taken in conformity with the request of the Pharmacy faculty and of the Minnesota State Pharmaceutical Association. Heretofore the Pharmacy requirements for entrance and graduation taken together were the lowest at the University although the practice of pharmacy is one of the most responsible professions. The recent survey of pharmacy from the functional standpoint, carried out by the Commonwealth Fund under the direction of Dr. W. W. Charters, has clearly pointed out the necessity of a minimum of four years of training as a preparation for the practice of pharmacy. This need was realized years ago by a number of pharmaceutical educators and certain colleges

of pharmacy have offered, for a number of years now, four-year courses. Although these courses were optional, some of the more farsighted students entered upon them and the courses have been growing in popularity of late.

The University Colleges of Chemistry, Mines and Engineering are the only other colleges on the campus who require a minimum of four years of satisfactorily completed work for a degree. The College of Pharmacy is now on an equality with these colleges in that respect. With respect to prerequisite academic requirements, these colleges are two years behind the Colleges of Medicine, Dentistry, Law, Education and Business, the latter colleges requiring an academic preparation of two years in the College of Science, Literature and Arts before they admit their students to technical work. The College of Dentistry has just raised its prerequisite academic requirement from one to two years and in that respect is now on a parity with the other colleges named.

It will be seen, therefore, that while the College of Pharmacy has been advanced in standing to the equal of that of the Colleges of Chemistry, Engineering and Mines, it is still two years behind the Colleges of Medicine, Dentistry, Law, Education and Business, notwithstanding that the professions represented by these colleges carry on no more responsible practice than pharmacy, possibly with the exception of Medicine.

The pharmacists of the State should and no doubt do rejoice at the elevation of pharmaceutical educational standards at the University. By the action of the Regents, the request of the State Association was granted in essential respects and the pharmacists should be and no doubt are satisfied with the action taken. It would be unreasonable for the University to exclude students from courses in pharmacy unless the students completed a full four-year course. No doubt the fact that no degree will be granted for less than the completion of the old established four-year course, will have the effect of increasing the matriculants for that course.

The Minnesota State Pharmaceutical Association, at its last meeting in February, instructed its Legislative Committee to seek an amendment to the present pharmacy law, increasing the two-year prerequisite college requirement to three years. The passage of that amendment at the next legislature will require all students to remain at least three years at the college. They need not remain longer but in that case they would not receive a degree. The proposed amendment is made practically necessary by the raising of the minimum educational standard from two to three years imposed upon the members of the American Association of Colleges of Pharmacy. Many of the member colleges of the Association already offer four-year courses but the College of Pharmacy of the University of Minnesota is one of the first colleges requiring a *minimum* of four years for a degree in pharmacy. By the Regents' action, this College now has advanced the minimum credit requirement for the lowest degree from around two hundred to two hundred and forty-five credits. Forty-five of the credits must be in fields covered by academic subjects. Thirty of these credits are obligatory (rhetoric 10 credits; modern language 10 credits; physics 10 credits) and fifteen elective and may be taken in the College of Science, Literature and Arts or at any other college of equal standing. Junior colleges are being established in various parts of the State. Some are already in operation. These academic

subjects can be completed at such junior colleges so that candidates for the pharmacy degree presenting those completed credits, need to remain only three years at the University in case they prefer to do so.

The action of the Board of Regents does not affect the two higher courses leading to the Master's and Doctor's degrees in Science in Pharmacy. The B. S. course has been and will continue to be a prerequisite to these higher courses.

Students who enter the College in the fall of 1927, may or may not beome applicants for the lowest degree, as they choose. In case they become applicants, they could not receive the degree before the spring of 1931.

It may be of interest to pharmacists to learn that the demand for graduates from the four-year course has been constantly increasing of late years, and it is reasonable to believe that the growing competition and stress of life will increase that demand.

The College of Pharmacy was the first, as far as I know, to abolish the title "Graduate in Pharmacy" in 1914 and now abolishes the title "Pharmaceutical Chemist." The collegiate nature of these titles has never been admitted by higher institutions of learning. The degree Bachelor of Science in Pharmacy is a degree of unquestioned collegiate standing.

(In the following paper Dean LaWall has touched upon a very important subject. The Professor who only knows his own subject is narrow indeed and cannot make the success he would, if his education were broader. The time has come when teachers of pharmaceutical subjects need to be well-trained in the general sciences and have such cultural training as is given by collegiate English, mathematics, modern languages, psychology, economics, history, etc. This leads us toward the requirement of collegiate training as a prerequisite to Schools of Pharmacy. All who enter may not need this training at present, but surely all who intend to become "Teachers" in Schools of Pharmacy need it. Dean LaWall's suggestions for usefulness in everyday life are excellent and all teachers in schools of Pharmacy should be deeply interested in his contribution.—C. B. JORDAN, *Editor.*)

WHAT SHOULD A PHARMACY COLLEGE PROFESSOR KNOW?

BY CHARLES H. LAWALL.*

In the admirable study of pharmacy which has occupied the attention of a committee working under the expert leadership of Dr. W. W. Charters of the Commonwealth Foundation, and which is now approaching completion, the survey has had for its fundamental objective the answer to the question "What Should a Pharmacist Know?"

The breadth and comprehensiveness of the answer was a surprise, not only to the Director of the study, Dr. Charters, who approached the subject free from the prejudice or bias of one who is closely connected with pharmacy, but it also astonished many who had been identified for many years with the teaching of future pharmacists.

The published report, which may be expected some time during the year, will undoubtedly be a revelation to the majority of those who take the trouble to read it, and will serve as an inspiration for the development of a new era in pharmaceutical education.

---

* Dean, Philadelphia College of Pharmacy and Science.

What a pharmacist should know, therefore is a question to which a complete answer may soon be expected. But when may we expect an answer to the equally important question which has been taken for the title of this present contribution?

Without going into the subject in an argumentative way and with no reference to degrees or even to experience on the part of present professors, let us briefly consider this subject from a common sense and very practical standpoint.

The first thing the professor should know is the difference between education and training. The study of medicine, of pharmacy, of dentistry, of chemistry, of engineering, and other professional subjects, while of educational value, is not education in itself. It is specialized training, and specialized training always tends to destroy perspective and narrow the recipient, so that while he becomes a useful unit in his particular field of work he lacks that intangible something, that composite of indefinable attributes which distinguishes one who is truly educated.

The suggestion, in a committee report several years ago, to include astronomy in the list of cultural subjects of pharmacy, subjected one of our conference members to ridicule from some quarters. Yet, in the main, he was right. Remoteness from practical application should not carry with it a stigma. Pragmatism is the bane of most professional curricula. Nothing is taught that is not intended to be directly useful. Whether it actually is or not is an entirely different question and accounts for the discrepancies between the number of college graduates who take State Board examinations and the number who actually pass, for in this connection comes the age old argument as to who shall decide what is useful and practical in the matter of education.

An educator of national fame a few years ago defined an education as "What a man has left after he has forgotten all that he learned in college." Manifestly, this definition could not be applied to education along professional lines, for the things taught there are taught to be remembered, not to be forgotten.

We cannot measure success in terms of material prosperity alone. Happiness, contentment, the use of leisure to one's own advantage and satisfaction, are factors of undeniable importance in success. To know how to play is just as necessary as to know how to work, and makes the work much easier and better, as a rule.

It is advisable, therefore, for a professor to know more than his own subject if he is to function efficiently as a unit in the scheme of educational progress. One way of attaining this goal is for the Faculty of an institution to have frequent meetings of a certain broad type, different from the ordinary Faculty meetings where purely administrative matters are discussed.

These meetings should be interdepartmental. They should include every member of the instructional corps. There should be social contact of some kind, such as a luncheon or dinner. This should then be followed by the presentation of some scientific or professional subject by the head or a member of one of the departments of instruction. By careful planning the entire field of work may be covered during the course of the College year, and each number of the instructional corps will have had an opportunity to gain an insight into the work of other departments than his own and will have a new perspective of his work—its scope, its opportunities and its needs.

The professor should also know and appreciate more fully his relationships

with the community at large. He should see himself as a necessary factor in the dissemination of scientific information to the public. This may be accomplished in several ways. One of these is by the arranging of popular lectures upon scientific subjects, to be prepared and delivered by those members of the Faculty who are best qualified to serve in this direction. There is in every community a large group of people who are science-hungry, and the satisfying of this hunger by lectures based upon authoritative data and in which the high voltage of ultra-scientific knowledge and terminology have been stepped down to an understandable and correct form, is one of the opportunities for service of which advantage is too seldom taken.

Another very satisfactory method of aiding the community is by the offering of scientific advisory service to the newspapers of the city or town. This should be offered in such a manner that the newspaper publisher or editor may feel free to avail himself of the opportunity without any obligation to reveal the source of the assistance. "Newspaper science" has come to be a term of ridicule or reproach. It is not due to the intention or the desire of the newspapers to deliberately misstate the facts, but to ignorance alone. Newspaper publishers and editors eagerly welcome constructive assistance of this kind. Let our pharmacy colleges offer such assistance and see how quickly it will be accepted and how much good can be accomplished with a very small expenditure of energy.

Still another phase of community helpfulness is illustrated in the numerous opportunities which are available for addressing luncheon clubs, high school assemblies, church clubs, civic organizations, neighborhood gatherings and the like. One fundamental fact must be kept in mind. If a group of this kind is to be of real constructive value, it must subordinate its individuality as much as is humanly possible. "Your druggist is more than a merchant" is a slogan which has a much deeper meaning than appears upon the surface. And so "Your college professor must be more than a teacher" is an equally illuminating sentence if accepted at its true worth.

There is a great opportunity for pharmacy if the pharmacists themselves once realize it, and this opportunity will come more quickly when the teachers in colleges of pharmacy come to a realization of their responsibilities, not only to their alumni and to their students, but to the communities of which they are an integral part. Modern commercial activities are largely directed toward selling people something that they do not want and probably will never need.

Educational activities are principally concerned with selling students something they do not want at present, but will need very much in later life. "Extra" educational activities may be properly directed into the pleasanter and more profitable channels of giving a number of people exactly what they want and at a time when they most want it.

KRESGE FOUNDATION.

Sebastian S. Kresge has established a $25,000,000 fund for philanthropic and educational purposes.

Only tentative plans have been outlined for the Kresge Foundation's activities so far, but it is expected that a permanent organization under Mr. Kresge's guidance will soon begin a survey looking toward a definite program of giving financial assistance to educational, charitable and religious purposes and advancements.

U. S. P. EXHIBIT AT A. M. A. CONVENTION, DALLAS, TEX., APRIL 19 TO 23, 1926.

The U. S. P. exhibit at the A. M. A. Convention consisted of drugs, chemicals, preparations and typical prescriptions based upon "Useful Drugs" published by the American Medical Association.

In the background of the exhibit will be seen eighteen prescriptions with all crude drugs, chemicals and preparations involved in their preparation. These prescriptions were prominently displayed with a large copy of each prescription, connected by ribbons to the drugs, their preparations and final use in the prescription.

Samples of all new admissions to U. S. P. X were displayed together with a number of U. S. P. X crude drugs so arranged as to attract attention to the exhibit.

Booklets were distributed calling attention to admissions, changes in title, etc., of U. S. P. X drugs and preparations. Dean C. A. Duncan, of Baylor University School of Pharmacy, Delegate of the AMERICAN PHARMACEUTICAL ASSOCIATION to the American Medical Association had charge of the exhibit with coöperation of Prof. S. Y. Althoff, assisted by senior students of Baylor University School of Pharmacy.

CORRESPONDENCE

EXTRACTS FROM LETTERS OF LIFE MEMBERS, A. PH. A.

F. C. Waterbury.—"I am delighted to receive the certificate of Life Membership, and I am having it framed and hung in my office.

"I want to assure you that I will be only too glad to assist you in any way possible in the successful termination of the headquarters building."

W. M. Burton.—"The certificate of life membership in the AMERICAN PHARMACEUTICAL ASSOCIATION, together with your letter, reached me promptly. I desire to express to the ASSOCIATION, through you, my great appreciation of the honor conferred.

"I feel that one of the great pleasures of my life has been my association with fellow-pharmacists, and now no matter what may happen I shall always be able to keep in touch with them through the reports of the ASSOCIATION."

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

Article IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meetings of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

BALTIMORE.

Charles Stevens, of the Experimental Medicine Department of Messrs. Parke, Davis & Co., delivered the lecture before the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION on April 29, 1926. The subject included "Small-pox and Vaccination, and Bacterial Vaccines," illustrated by means of stereopticon and slides.

In the lecture on Small-pox and Vaccination, Mr. Stevens gave a description of small-pox or variola; the first authentic medical record of the disease, the history of its first appearance in Europe and Germany and its first appearance in the Western Hemisphere in Mexico in 1520, and in Massachusetts in 1633.

In the first part of the lecture slides were shown of cases of small-pox that had been occurring in the United States up to within the last five years, of what is known as the confluent and discrete types. In the latter part of the lecture cases of small-pox of the hemorrhagic type, which have been occurring within the last few years, especially amongst the unvaccinated, with an extreme high death rate were shown. The pictures shown were photographs of actual small-pox patients.

Attention was called to inoculation which had been practiced in China and Asiatic countries, which no doubt caused many an epidemic in those days, and which was advocated by Lady Montague in England in 1718. It was recognized at that time that a disease, which affected heifers and cows, an eruption appearing on the teats, udder and neighboring parts, having been transmitted to people attending these animals, dairy maids, etc., protected these people from small-pox; but it was not until Sir Edward Jenner, on May 14, 1796, first inoculated a patient with the contents of a cow-pock that the preventive influence of vaccination was first tried in a scientific manner.

The manufacture of Vaccine Virus was described and illustrated by slides, the first examination of the heifers or yearlings; the preparing of the animal for the rubbing in of the seed virus (virus from cow-pox) the length of time they are kept in the propagating room; also the removal of the virus with the curet; the pulp extracted, and mixed with glycerin, passed through sterilized grinders; then in a shaking machine and shaken for a number of hours; the test for activity and sterility was described, also the different methods of supplying the vaccine virus for commercial use from the ivory points to the capillary glass tubes now used.

The lecture on Bacterial Vaccines was a brief discussion of the subject of immunity, natural, acquired and active immunity, briefly what a Bacterial Vaccine is; a history of some of the men whose work marked distinct epochs in the development of bacterial vaccine therapy. Pictures were shown of Drs. Robert Koch, Louis Pasteur, Rudolf Virshow, Elie Metchnikoff, Sir Armroth E. Wright, with a brief description of some of the work of these men in connection with immunity and bacteriology. Mr. Stevens described the preparation of culture media; the obtaining of pure cultures; the identification of these colonies; the planting of these for the growing on a large scale for commercial purposes; the removal of the bacteria from the surface of the culture media; a description of the testing of Bacterial Vaccines for sterilization by means of the ærobic and antiærobic tests, and the physiological test on the guinea-pig; the finishing of vaccines in packages for commercial use and the final check for sterility of the commercial package by means of cultural and physiological tests.

The "Piperaceæ Family"—young artists of the School of Pharmacy, furnished the very delightful musical program of the evening.

The May meeting of the Baltimore Branch will be held on Tuesday evening, the 25th. Dr. Robert P. Fischelis of Newark, N. J., President of the Drug Trade Bureau of Public Information, will present a paper on "Pharmacy's Message to the Public."

B. OLIVE COLE, *Secretary-Treasurer.*

MAY MEETING.

The last meeting of the season of the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the Hotel Emerson on the evening of May 25, 1926, Dr. R. L. Swain presiding.

Dr. Robert P. Fischelis, of Newark, N. J., President of the Drug Trade Bureau of Public Information, gave a very interesting presentation of "Pharmacy's Message to the Public." Upon entering the South Hall of the Hotel Emerson, one was confronted with a display of "Valuable Prints and Sketches." This display included not only the pictures and record of achievements of the leaders of pharmacy, but also unusual clippings portraying public opinion of pharmacy.

Dr. Fischelis outlined the history of the creation and progress made by the Bureau, and mentioned the difficulties encountered at first in the selection and approval of news to be bulletined in this manner. Experience gained in the first years of the existence of the Bureau has been of valuable assistance to Dr. Fischelis in formulating methods of disseminating publicity applicable to national, state and local pharmaceutical associations, as evidenced by the great number of complimentary articles pertaining to pharmacy now being printed in the newspapers throughout the country.

The members of the Baltimore Branch tendered a rising vote of thanks to Dr. Fischelis for his presentation of this very necessary and interesting phase of publicity.

Mrs. Mamie R. Rysanek Toula rendered several very pleasing solos, including Bohemian folksongs. She was assisted at the piano by Mr. Frank J. Slama.

The members of the Baltimore Branch were also pleased that Mrs. Fischelis accompanied Dr. Fischelis on this occasion.

B. OLIVE COLE, *Secretary-Treasurer.*

CHICAGO.

The Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION adopted the following resolution at its April meeting after careful consideration of a paper presented by Pharmacist Peter J. Kolb at the meeting, March 5th, entitled, "The Problem of the Narcotic Addict."

WHEREAS, pharmacists have been harassed and placed in jeopardy of prosecution and persecution from officials enforcing the Harrison Antinarcotic law in connection with the dispensing of narcotics to incurables upon registered physicians' prescriptions; and

WHEREAS, individuals with incurable diseases requiring narcotics and aged and incurable addicts under the advice of physicians need remedial and humanitarian treatment, therefore be it

Resolved, That the pharmacists of this country unite in a demand that provision be made for registering each such sufferer from addiction or other incurable disease and that a method be devised whereby pharmacists may supply the legitimate requirements of such sufferers upon receipt of proper order forms from the physician in attendance without interference from uninformed narcotic inspectors.

THE PROBLEM OF THE NARCOTIC ADDICT.

BY PETER J. KOLB.*

A man becoming afflicted with an ailment such as bronchial asthma consults a physician and to relieve the difficult breathing and spasmodic cough the physician administers a narcotic hypodermically and relief is obtained at once. However, as the conditions are not cured and the suffering from the pain and impaired breathing continues, more of the narcotic drug is prescribed and in time the patient is afflicted with another disease, namely, that of narcotic addiction. Now the treatment must be continued indefinitely for a double purpose—the distress of the asthmatic attack and also to take care of the increasing requirements of his addiction. This condition may go on for years and sooner or later his narcotic requirements attract attention. The physician who treated him at first perhaps has passed

* Pharmacist.

away and he comes under the care of another or perhaps several other physicians. The only remedy which gives any results whatever appears to be morphine. In some cases other sedatives are tried but the patient gets no relief from these and the doctor is forced to continue the narcotic treatment with the morphine, and if it is not prescribed and dispensed, the condition of the patient becomes pitiful.

Patients such as those described above are not so few in number, as almost any pharmacist knows, and the problem that faces the pharmacist is his attitude toward such patients with their prescriptions constantly calling for narcotics. In case the large quantity of morphine needed attracts the attention of the narcotic authorities, the case is investigated, but beyond going around in circles, nothing can be changed in a very material way. Either the patient must continue to receive treatment in the established way or he will die and although the situation is severely criticised, what can be done? The physician may ask for a consultation with other physicians but the consensus of medical opinion is that the patient must continue the narcotic. If an attempt is made to cure the patient of addiction, the old symptoms of asthma cause such suffering that the remedy cannot be withdrawn. Even if the addict is not suffering from another incurable disease and is over 50 years of age, his addiction is considered incurable.

In cancer cases, inoperable exophthalmic goiter, etc., death usually solves the problem in a short time, but in asthma and chronic neuritis the patient may live for years under morphine and his general health appear to improve if his systemic requirements are met in a proper way.

Whenever the authorities try to make a criminal case because the amount of morphine prescribed and dispensed to a person over a period of years is so large, serious trouble may result to the physician and the pharmacist, but the status of the patient and his ailment is not changed and he must continue to receive treatment or death will ensue. The question then arises as to what is too much narcotic and when does legitimate treatment end and criminal practice begin. How can this question be answered in a correct, scientific way?

It is just at this point that the humanitarian point of view should enter in. Physicians frequently refuse to take care of these cases, they "pass the buck" as it were, but that does not change the fact that the patient must have treatment or die. If morphine is the only remedy which science has that will enable these unfortunate victims to live, why look at the prescribing and dispensing of morphine to such patients only from the criminal point of view?

Whenever a pharmacist dispenses prescriptions for such an unfortunate person for some time, he lays himself under the suspicion of catering to the criminal element of society, and even if the facts prove conclusively that medical science can do nothing else but give relief, technical points are usually found to embrace and punish the pharmacist who has been so unfortunate as to have such sufferers as his patrons.

There is an element of irony in this situation. If narcotic prescriptions are refused, the patient and the family do not understand why all medicines are not legal. If the morphine can be obtained and used regularly, the patient may outlive his physicians and thrive under this treatment. On the other hand if the medicine is refused they are in a terribly pitiful condition. Society has functioned well for other unfortunates such as the insane, the poor and the ill; why cannot some capable and legal provision be made to provide for those individuals with incurable diseases requiring narcotics and the aged and incurable addicts? Why are such persons subject to suspicion, humiliation, cross-examination and why is the pharmacist threatened with criminal prosecution for the dispensing of narcotics to such persons?

The Harrison Law was passed as a measure of public necessity to permit the dispensing of dangerous habit-forming drugs only to the hopelessly ill, but when the fact is established beyond doubt then only the medical profession can decide how much and how long treatment must be continued. No theory can stand between the physician and what can be done for the hopeless sufferer. In spite of what laymen or officers may say or do, the physician, both by education and practical observation, is the only man who can determine the solution correctly.

The author would suggest as the first step toward protection of physician, pharmacist, and patient that all chronic cases should be reported and listed with the Narcotic Division. If these cases are ambulatory they should be

required to report about once in 30 days for examination to show that the narcotic is still needed. In this way complete control of such cases could always be had. Such examination of the patient should, of course, be made by a competent physician. A second suggestion would be that a record of all prescriptions calling for an unusual amount of narcotic be sent by the pharmacist monthly to the narcotic division in order that a check may be kept on these unusual cases and in case criminal practice is being followed it can be detected promptly.

MAY MEETING.

The 159th meeting of the Chicago Branch, AMERICAN PHARMACEUTICAL ASSOCIATION was held at Hotel Sherman, Friday, May 7, with President Kolb in the chair. The meeting was preceded by a dinner in honor of Prof. John Uri Lloyd and Dr. John Thomas Lloyd. President Kolb introduced Dr. John T. Lloyd who presented an illustrated lecture on "Coca, Its Use by the Indians of the Highlands of Columbia." The pictures were beautifully prepared and Dr. Lloyd held the rapt attention of his audience with his account of the travels and adventures on the journey from the port of Buena Vista on the Pacific across two ranges of the Andes to the headwaters of the Magdalena River. His experience with the coca-eaters was of great interest and the account and pictures of them very vivid. He stated that many times he had seen these men travelling on foot with heavy loads for twelve hours without a stop for food and keep it up for day after day. The coca-using Indians are a rugged, strong race of splendid physique and health.

Prof. John Uri Lloyd also addressed the meeting for a few minutes and told the audience how to be happy. He believed in plenty of profitable work but deprecated the rush and struggle of the present day.

P. J. KOLB, *President.*

E. N. GATHERCOAL, *Secretary.*

DETROIT.

The May meeting of the Detroit Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at Ann Arbor, Friday the 14th.

A dinner at the Michigan Union preceded the meeting, which was called to order by President Rowe in the Pharmacy and Chemistry Building of the University of Michigan at 8.15 P.M.

The minutes of the previous meeting were read and approved. The President announced the death of Dr. A. B. Lyons. J. H. Webster moved that resolutions be drawn up and a copy of same to be sent to the widow.

Mr. Seltzer, chairman of the committee on nominations, reported the names of the nominees for officers for the ensuing year as follows:

President, L. W. Rowe
Vice-Presidents: A. A. Wheeler and Frederick T. Brandt
Secretary, Bernard A. Bialk
Treasurer, F. F. Ingram, Jr.
Chairman of Program Committee, R. T. Lakey
Council of Clerks, A. E. Meyer and W. E. Meyer
Council of Students, University of Michigan, E. A. Nehlson and Ray A. Petelski
Council of Students, College of the City of Detroit, Norman Gabel and Alfred Tellin
Council of Students, Detroit College of Pharmacy, Clifford Anderson and Forest Baker

W. L. Scoville moved that the report be accepted. This was seconded by C. H. Stocking and, thereafter, it was moved that the Chairman cast a unanimous ballot for the officers named by the Committee.—Carried.

Mr. Hall expressed the appreciation of the Branch for the service rendered by the past officers; he said their work was well done and they deserved reëlection.

President Rowe, after a short address of acceptance, presented the speaker of the evening, Dr. Edward H. Kraus, dean of the Pharmacy Department of the University of Michigan. He gave a most interesting talk on "Pharmaceutical Education in Europe." He referred to the condition of the war-ridden countries and their endeavor to stage a comeback. The Americanization of the educational systems and their growing favor toward prohibition were the outstanding features of his observation. The speaker exhibited a large number of books and newspapers to illustrate his talk.

President Rowe thanked Dr. Kraus for his interesting talk and the hospitality shown the Detroit Branch at Ann Arbor. Mr. Webster then moved that the meeting adjourn in honor of the late Prof. Leonard Ransom Wagener whose brilliant career was cut short by death.

BERNARD A. BIALK, *Secretary.*

PITTSBURGH.

Dr. F. J. Blumenschein addressed the Pittsburgh Branch, A. PH. A., May 18, on "Some New Emulsifiers."

PHILADELPHIA.

The May meeting of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the P. A. R. D. Building, 2017 Spring Garden St., Tuesday evening, May 18, 1926. President Cliffe presided.

The minutes of the April meeting were read and approved. The Secretary reported that about twenty new members had been obtained but he was unprepared to announce their names at this meeting.

The following Committees were announced as having been appointed by President Cliffe for the ensuing year.

Membership: Freeman P. Stroup, Chairman; Mort. M. Smith, Otto Kraus, A. G. Keller, John K. Thum.

Practical Pharmacy: B. C. Goodhart, Chairman; E. J. Hughes, Bertha L. deG. Peacock, Howard J. Siegfried, Leo Penn.

Professional Relations: Frank E. Stewart, Chairman; F. W. Haussman, Charles T. Pickett, R. H. Lackey, J. W. Sturmer.

Entertainment: J. W. E. Harrisson, Raymond Hendrickson, Wm. J. Stoneback.

The President reported that Professor Stroup was unable to serve on the membership committee and that vacancy would be filled later.

Local Secretary Hunsberger, A. PH. A., reported the following appointments of chairmen for the various committees for the A. PH. A. convention during week of September 13; each chairman to complete his own committee.

COMMITTEE CHAIRMEN:

Allied Professions—John R. Minehart
Entertainment—Raymond Hendrickson
Finance—O. W. Osterlund
Hospitality—M. M. Smith
Hotels—B. C. Goodhart
Information—J. W. E. Harrisson
Secretary to General Committee—Robert J. Ruth
Treasurer to General Committee—J. C. Peacock, Treasurer
Ladies—Mrs. Ambrose Hunsberger
Publicity (National)—R. P. Fischelis
Publicity (Local)—C. H. LaWall
Registration—Wm. J. Stoneback
Speakers—W. L. Cliffe
Sporting Activities—R. H. Lackey
Veterans—Harry Swain

The report of these appointments and the plans for their work was accepted.

The President then presented the speaker of the evening, Howard Kirk, Esq., a member of the Philadelphia bar and lecturer on Pharmaceutical Law and Jurisprudence at the Philadelphia College of Pharmacy and Science. Mr. Kirk presented a splendid story of the Narcotic Act and a phase of it that not many ever have followed. He first gave a general review of the act itself and then proceeded to unravel the history and growth of the use of opium from the earliest times, referring particularly to the parts played in this by China, India, England, the United States, the World War, the League of Nations and its Opium Conference from which the U. S. delegates withdrew because the effort of the conference seemed impractical. The method of Mr. Kirk's presentation was splendid and most interesting throughout and a rising vote of thanks was tendered him at the close of his talk.

A general discussion followed and a number of points regarding the Harrison Act as amended in November 1925 were discussed. The requirements for pharmacists under this act as amended were read in abstract form and special attention was directed to the following points, as these cover the questions which are most frequently raised to-day:

"Narcotic prescriptions must be kept for two years.

"Prescriptions must bear physician's signature, address and registry number, also patient's full name and address.

"Never fill a prescription written by a physician for his office practice. If a physician desires a solution, a retail dealer may supply him on an OFFICIAL ORDER FORM one ounce of an aqueous solution, any percentage, at one time. If he desires tablets his order must be made out to the wholesale dealer.

"*Exempt Preparations—Internal:* These must not contain more than 2 grains of opium, 1 of grain Codeine, one-fourth grain of morphine and one-eighth grain of heroin to the fluid ounce of liquid, or, if solid or semi-solid, in one avoirdupois ounce and must contain valuable medicinal qualities other than that derived from the narcotics contained therein. A prescription conforming to these requirements may be refilled provided a proper record is kept of the same.

"*Exempt Preparations—External:* Prescriptions for external use may contain any amount of narcotic drugs, but must contain sufficient other medication to render them unfit for

internal use. Use for aural, nasal, ocular, rectal, urethral or vaginal purposes is not regarded as external.

"A retail dealer is required to keep a record of all sales of exempt preparations including *Mistura Glycyrrhizæ Comp.* and other preparations similar to it."

The following resolution was presented, and passed and ordered to be sent to Attorney E. C. Brockmeyer, at Washington, D. C.

"Be it resolved that the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION respectfully protests against Senate Bill 4085, a bill referring to the Harrison Narcotic act, as we consider it unwarranted interference with medical and pharmaceutical service to the public."

The following resolutions were also presented, passed and ordered sent to the Prohibition Director of Philadelphia.

"Be it resolved that the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION will endeavor to coöperate with the Federal Prohibition Director in the enforcement of the 18th Amendment and the enabling acts—

That the President be authorized to appoint a committee of three to coöperate with the Prohibition Director."

The usual dinner for members was held early in the evening at Green's Hotel.

ADLEY B. NICHOLS, *Secretary.*

REMOVAL OF MERCUROCHROME STAINS.

According to "New and Nonofficial Remedies," 1924, "the aqueous solution (of mercurochrome) stains the skin red, but the discoloration may be removed by washing in a solution of sodium hypochlorite (solution of chlorinated soda)."

The A. M. A. Chemical Laboratory reports that mercurochrome, acriflavine and other like stains can often be removed according to the following general procedure: The stained cloth is immersed in as small an amount as possible of a solution containing about 1 per cent of hydrochloric acid (1 part of diluted hydrochloric acid U. S. P. and 9 parts of water) and 2 per cent of potassium permanganate. The cloth should remain in this solution not longer than one minute; it is then transferred without rinsing to a solution containing not more than 1 per cent of hydrochloric acid, to which from 5 to 15 per cent (by volume) of solution of hydrogen peroxide, U. S. P., has been added. As soon as the potassium permanganate has been reduced by the hydrogen peroxide, the cloth is well rinsed in water. If the stain has not been entirely removed, the procedure is repeated, the cloth being permitted to remain in the acid potassium permanganate solution for a somewhat longer period.

Before trying the method on cloth, however, it is advisable, if possible, to subject a remnant of the unstained material to the same procedure in order to determine (1) whether or not the cloth will withstand the treatment, and (2) in the case of dyed goods, whether or not the original color is removed. In the case of fresh stains of mercurochrome, or acriflavine on dyed cloth, the former, not being fixed, can often be removed without affecting the original color of the cloth.

Stains on the hands can readily be removed by the use of the solutions just described.—*Journal A. M. A.*

TULAREMIA TRANSMITTED TO HUMANS BY RODENTS.

Research into the causes of tularemia, a disease which causes severe ulcers and swelling of the body glands, as well as other physical ailments, has disclosed that it has been transmitted to humans mainly through the rabbit, but that ticks and flies also convey the germs.

Dr. Edward Francis, of the Hygienic Laboratory of the United States Public Health Service, has been investigating the disease virtually since its discovery, in 1912. He has stated that notwithstanding precautionary measures some attendants of the Laboratory engaged in experimentations had contracted the disease.

Convalescence from tularemia is slow. Some patients have not entirely returned to normal for six months or even a year.

The disease heretofore has been diagnosed erroneously as septic infection, typhoid, influenza, anthrax and other infections, owing to some symptoms common in these diseases.

Charts and designs covering the ravages of tularemia, from its inception to its transmission to man, have been prepared by the Hygienic Laboratory for display at the Sesqui-Centennial Exposition at Philadelphia.

PHILADELPHIA.

The May meeting of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the P. A. R. D. Building, 2017 Spring Garden St., Tuesday evening, May 18, 1926. President Cliffe presided.

The minutes of the April meeting were read and approved. The Secretary reported that about twenty new members had been obtained but he was unprepared to announce their names at this meeting.

The following Committees were announced as having been appointed by President Cliffe for the ensuing year.

Membership: Freeman P. Stroup, Chairman; Mort. M. Smith, Otto Kraus, A. G. Keller, John K. Thum.

Practical Pharmacy: B. C. Goodhart, Chairman; E. J. Hughes, Bertha L. deG. Peacock, Howard J. Siegfried, Leo Penn.

Professional Relations: Frank E. Stewart, Chairman; F. W. Haussman, Charles T. Pickett, R. H. Lackey, J. W. Sturmer.

Entertainment: J. W. E. Harrisson, Raymond Hendrickson, Wm. J. Stoneback.

The President reported that Professor Stroup was unable to serve on the membership committee and that vacancy would be filled later.

Local Secretary Hunsberger, A. PH. A., reported the following appointments of chairmen for the various committees for the A. PH. A. convention during week of September 13; each chairman to complete his own committee.

COMMITTEE CHAIRMEN:

Allied Professions—John R. Minehart
Entertainment—Raymond Hendrickson
Finance—O. W. Osterlund
Hospitality—M. M. Smith
Hotels—B. C. Goodhart
Information—J. W. E. Harrisson
Secretary to General Committee—Robert J. Ruth
Treasurer to General Committee—J. C. Peacock, Treasurer
Ladies—Mrs. Ambrose Hunsberger
Publicity (National)—R. P. Fischelis
Publicity (Local)—C. H. LaWall
Registration—Wm. J. Stoneback
Speakers—W. L. Cliffe
Sporting Activities—R. H. Lackey
Veterans—Harry Swain

The report of these appointments and the plans for their work was accepted.

The President then presented the speaker of the evening, Howard Kirk, Esq., a member of the Philadelphia bar and lecturer on Pharmaceutical Law and Jurisprudence at the Philadelphia College of Pharmacy and Science. Mr. Kirk presented a splendid story of the Narcotic Act and a phase of it that not many ever have followed. He first gave a general review of the act itself and then proceeded to unravel the history and growth of the use of opium from the earliest times, referring particularly to the parts played in this by China, India, England, the United States, the World War, the League of Nations and its Opium Conference from which the U. S. delegates withdrew because the effort of the conference seemed impractical. The method of Mr. Kirk's presentation was splendid and most interesting throughout and a rising vote of thanks was tendered him at the close of his talk.

A general discussion followed and a number of points regarding the Harrison Act as amended in November 1925 were discussed. The requirements for pharmacists under this act as amended were read in abstract form and special attention was directed to the following points, as these cover the questions which are most frequently raised to-day:

"Narcotic prescriptions must be kept for two years.

"Prescriptions must bear physician's signature, address and registry number, also patient's full name and address.

"Never fill a prescription written by a physician for his office practice. If a physician desires a solution, a retail dealer may supply him on an OFFICIAL ORDER FORM one ounce of an aqueous solution, any percentage, at one time. If he desires tablets his order must be made out to the wholesale dealer.

"*Exempt Preparations—Internal:* These must not contain more than 2 grains of opium, 1 of grain Codeine, one-fourth grain of morphine and one-eighth grain of heroin to the fluid ounce of liquid, or, if solid or semi-solid, in one avoirdupois ounce and must contain valuable medicinal qualities other than that derived from the narcotics contained therein. A prescription conforming to these requirements may be refilled provided a proper record is kept of the same.

"*Exempt Preparations—External:* Prescriptions for external use may contain any amount of narcotic drugs, but must contain sufficient other medication to render them unfit for

internal use. Use for aural, nasal, ocular, rectal, urethral or vaginal purposes is not regarded as external.

"A retail dealer is required to keep a record of all sales of exempt preparations including *Mistura Glycyrrhizæ Comp.* and other preparations similar to it."

The following resolution was presented, and passed and ordered to be sent to Attorney E. C. Brockmeyer, at Washington, D. C.

"Be it resolved that the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION respectfully protests against Senate Bill 4085, a bill referring to the Harrison Narcotic act, as we consider it unwarranted interference with medical and pharmaceutical service to the public."

The following resolutions were also presented, passed and ordered sent to the Prohibition Director of Philadelphia.

"Be it resolved that the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION will endeavor to coöperate with the Federal Prohibition Director in the enforcement of the 18th Amendment and the enabling acts—

That the President be authorized to appoint a committee of three to coöperate with the Prohibition Director."

The usual dinner for members was held early in the evening at Green's Hotel.

ADLEY B. NICHOLS, *Secretary.*

REMOVAL OF MERCUROCHROME STAINS.

According to "New and Nonofficial Remedies," 1924, "the aqueous solution (of mercurochrome) stains the skin red, but the discoloration may be removed by washing in a solution of sodium hypochlorite (solution of chlorinated soda)."

The A. M. A. Chemical Laboratory reports that mercurochrome, acriflavine and other like stains can often be removed according to the following general procedure: The stained cloth is immersed in as small an amount as possible of a solution containing about 1 per cent of hydrochloric acid (1 part of diluted hydrochloric acid U. S. P. and 9 parts of water) and 2 per cent of potassium permanganate. The cloth should remain in this solution not longer than one minute; it is then transferred without rinsing to a solution containing not more than 1 per cent of hydrochloric acid, to which from 5 to 15 per cent (by volume) of solution of hydrogen peroxide, U. S. P., has been added. As soon as the potassium permanganate has been reduced by the hydrogen peroxide, the cloth is well rinsed in water. If the stain has not been entirely removed, the procedure is repeated, the cloth being permitted to remain in the acid potassium permanganate solution for a somewhat longer period.

Before trying the method on cloth, however, it is advisable, if possible, to subject a remnant of the unstained material to the same procedure in order to determine (1) whether or not the cloth will withstand the treatment, and (2) in the case of dyed goods, whether or not the original color is removed. In the case of fresh stains of mercurochrome, or acriflavine on dyed cloth, the former, not being fixed, can often be removed without affecting the original color of the cloth.

Stains on the hands can readily be removed by the use of the solutions just described.—*Journal A. M. A.*

TULAREMIA TRANSMITTED TO HUMANS BY RODENTS.

Research into the causes of tularemia, a disease which causes severe ulcers and swelling of the body glands, as well as other physical ailments, has disclosed that it has been transmitted to humans mainly through the rabbit, but that ticks and flies also convey the germs.

Dr. Edward Francis, of the Hygienic Laboratory of the United States Public Health Service, has been investigating the disease virtually since its discovery, in 1912. He has stated that notwithstanding precautionary measures some attendants of the Laboratory engaged in experimentations had contracted the disease.

Convalescence from tularemia is slow. Some patients have not entirely returned to normal for six months or even a year.

The disease heretofore has been diagnosed erroneously as septic infection, typhoid, influenza, anthrax and other infections, owing to some symptoms common in these diseases.

Charts and designs covering the ravages of tularemia, from its inception to its transmission to man, have been prepared by the Hygienic Laboratory for display at the Sesqui-Centennial Exposition at Philadelphia.

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1925–1926.

Office of the Secretary, 10 West Chase St., Baltimore, Md.

LETTER NO. 12.

May 25, 1926.

To the Members of the Council:

85. Motion No. 38 (See Council Letter No. 11, page 405) has been carried and the parties mentioned in this motion have been so notified.

86. Motion No. 39 (See Council Letter No. 11, page 415) has been carried and complimentary copies of the N. F. V were forwarded as directed.

87. Motion No. 40 (See Council Letter No. 11, page 405) has been carried and complimentary copies of the N. F. V will be forwarded to the publications mentioned as soon as available.

88. Motion No. 41 (See Council Letter No. 11, page 406) has been carried and President Walton has appointed Mr. Robert J. Ruth as Chairman of the Committee, the other members to be appointed later.

89. Motion No. 42 (See Council Letter No. 11, page 406) has been carried and the insurance placed on the property of the ASSOCIATION as directed.

90. Motion No. 43 (See Council Letter No. 11, page 407) and Motion No. 44 (See Council Letter No. 11, page 407) have been carried. Applicants for membership numbered 117 to 127 inclusive and applicants for membership numbered H-240 to H-250 inclusive are therefore declared elected.

91. Upon call of Chairman Hilton a meeting of the Executive Committee of the Council was held at the Hotel Washington, Washington, D. C., on May 6th. The minutes of the meeting of the Executive Committee are as follows:

The meeting was called to order by Chairman Hilton at 9.45 A.M. The following members were present: Hilton, Walton, Anderson, Whelpley, Koch, DuMez, and Kelly. Chairman Dunning of the Headquarters Building Campaign Committee and Editor Eberle of the JOURNAL were present by invitation.

The Secretary read a letter from Dr. Arny stating that he was unable to be present on account of a college examination the date for which had been arranged for some time.

The Chairman stated that Chairman Beal of the Headquarters Building Committee who had been invited to attend had telegraphed that he had been delayed and could not arrive until later in the day.

Chairman DuMez of the Committee on Publications reported that most of the manuscript for the 1924 YEAR BOOK had been delivered to the Lancaster Press and part of the proof had been corrected. Delivery of the book was expected to be made during the month of June. After a general discussion of the distribution of the YEAR BOOK, it was moved by Koch, seconded by Whelpley, that a letter be sent to all members who had not replied to the former inquiry as to whether the YEAR BOOK was desired, and that the book be delivered only to those who requested it. Carried.

Attention was called to the illness of Professor Jeannot Hostmann and it was moved by Whelpley, seconded by DuMez, that the Committee learns of his illness with deep sorrow and that the Secretary be instructed to express to Professor Hostmann the sympathy of the Committee. Carried.

On motion of Anderson, seconded by Whelpley, it was decided to take up the consideration of the report from the Headquarters Building Campaign Committee which was read by the Secretary.

After a general discussion of the report, it was moved by DuMez, seconded by Anderson, that the recommendations in this report be acted upon seriatim, and be referred, as adopted, to the Council. Carried.

Recommendation A. "That a vote on the location of the Headquarters Building be authorized"—was adopted on motion of Anderson, seconded by Koch.

Recommendation B was amended to read "That if the vote is authorized, publicity be given to this in the October 1926 issues of the Pharmaceutical Journals with the request that interested cities forward a statement of their respective advantages and offers to the Secretary of the ASSOCIATION on or before January 15th, 1927" and adopted on motion of Anderson, seconded by Koch.

Recommendation C was amended to read

"That a letter summarizing these statements and a first ballot be mailed to each member of the ASSOCIATION on February 15th, 1927 with a statement that only those ballots received by the Secretary of the ASSOCIATION on or before March 15th, 1927 will be counted," and adopted on motion of Anderson seconded by Walton.

Recommendation D was amended to read "The five cities receiving the greater number of votes in the preceding ballot are to be balloted on again in the same manner on April 1st, 1927, only those votes received by the Secretary of the ASSOCIATION on or before May 1st, 1927, to be counted. The two cities receiving the greater number of votes in the preceding ballot are to be balloted on again in the same manner on June 1st, 1927, only those votes received by the Secretary of the ASSOCIATION on or before July 1st, 1927 to be counted. The city receiving the greater number of votes in this ballot shall be the location of the Headquarters Building," and adopted on motion of Anderson seconded by Koch.

The Chair ruled that without objection *Recommendation E*—"That these ballots be sent apart from the ballots for officers"—would be omitted since this matter already had been dealt with. No objection was made.

On motion of Whelpley, seconded by Koch, the Secretary was instructed to include in the next Council Letter the recommendations adopted in reference to a vote on the location of the Headquarters Building with the recommendation that final action on them be taken by the Council at the September meeting.

It was moved by Koch, seconded by Whelpley, that item numbered fourteen in the report be amended to read "After the location of the Headquarters Building is determined the national pharmaceutical associations should be invited to avail themselves of the opportunity to occupy space in the building and that the plans of the building be modified in accordance." Carried.

At 1.40 P.M. the meeting adjourned until 2.30 P.M.

The meeting was called to order by Chairman Hilton at 2.35 P.M. The following members were present: Hilton, Walton, Whelpley, Koch, Anderson, DuMez, and Kelly. Treasurer Holton arrived after the meeting was called to order. Editor Eberle of the JOURNAL was present by invitation.

Editor Eberle submitted a brief report for the JOURNAL.

Chairman DuMez of the Committee on Publications reported that two thousand copies of Series *A* of the National Formulary, Fifth Edition, were completed on April 20, 1926, and that the publication had been copyrighted by the Secretary; that several corrections had been made in the plates and that the remaining eighteen thousand copies of Series *A* were now in process, of which five hundred copies would be interleaved and leather bound. Some correspondence with the W. B. Saunders Company in reference to the use of the text of the National Formulary, Fifth Edition, was submitted by Chairman DuMez. After discussion of the matter, it was moved by Anderson, seconded by Whelpley, that the Executive Committee recommend to the Council that action be taken to prevent in the future such use of the text of the National Formulary as may be granted by publishers of text and reference books until at least thirty days after the publication of the National Formulary. Carried.

On motion of Walton, seconded by Anderson, a vote of thanks was extended to Dr. DuMez for his care and attention in connection with the letters addressed to the W. B. Saunders Company.

On motion of Whelpley, seconded by Anderson, the recommendation of the Chairman of the Committee on Publications that a complimentary copy of the National Formulary, Fifth Edition, be forwarded to the National Museum was approved.

A communication from Secretary J. C. Krantz, Jr., of the National Research Conference, was read by the Secretary from which the following is quoted:

> "At the Des Moines meeting of the National Conference on Pharmaceutical Research a committee was appointed to consider the publication of a book in popular style, to create a picture of pharmacy and convey the spirit of pharmaceutical research to the rank and file of pharmacists, the pharmacy student and the laity. It was the consensus of opinion of those gathered at the meeting that this project should be fostered by the A. PH. A. itself rather than an organization which represents only one phase of pharmacy, *i. e.*, pharmaceutical research. In accordance with the opinions of those gathered at the meeting the Chairman is placing this project before the Council for its consideration.

"Attached you will find a list of chapters and authors of the proposed book 'Pharmacy, or the Spirit and Service of Our Profession,' along with letters which have been sent to the Deans and the Professors of Pharmacy in order to ascertain to some extent at least the potential market of the publication. The response to these has been most encouraging, the schools promising the sale of about eight hundred copies."

After discussion, it was moved by Anderson, seconded by Koch, that this proposal be referred to the Council for action at the September meeting and that the Committee on Publications be requested to make a study of the proposal in the meantime. Carried.

A communication from the Secretary of the Drug Trade Conference, with which were submitted the minutes of the meeting of the Conference in December 1925, was read by the Secretary. It was moved by DuMez, seconded by Koch, that the minutes of the Conference be referred to the delegates of the ASSOCIATION to the Conference with the request that they submit recommendations to the Council in reference to the proposed change in the By-Laws of the Conference. Carried.

Two communications from the International Pharmaceutical Federation were read by the Secretary, in which the ASSOCIATION was requested to coöperate with the Conference on several important proposals, and on motion by Whelpley, seconded by Walton, were referred to Dr. J. A. Koch, a delegate to the Conference.

On motion by Anderson, seconded by DuMez, the President of the ASSOCIATION was requested to appoint a Councilor to represent the ASSOCIATION in the American Association for the Advancement of Science.

The report of the Treasurer for 1925, with the report of the auditors, was submitted by the Secretary, and accepted for printing on motion of Koch, seconded by DuMez.

On motion of Holton, seconded by DuMez, the invitation to be represented by delegates at the World Conference on Narcotic Education was laid on the table.

Chairman Hilton, who was requested to investigate the matter at the Des Moines meeting, reported that it would not be necessary to copyright the JOURNAL of the ASSOCIATION, but that if further protection is desired, the title of the JOURNAL should be trademarked which would cost ten dollars. It was moved by Koch, seconded by Whelpley, that it be recommended to the Council that the title of the JOURNAL be trademarked and that an appropriation of ten dollars be made for that purpose. Carried.

After a general discussion, on motion of Whelpley, seconded by Koch, the offer of Mr. William Gray of Chicago as reported in the last Council letter was referred to the Chairman of the Council, the Treasurer of the ASSOCIATION, and the Secretary of the ASSOCIATION with the request that they study this offer and submit a recommendation to the Council.

Chairman Beal of the Headquarters Building having arrived at the meeting, the report of the Campaign Committee and the action of the Executive Committee on the recommendations in this report were reviewed, and received his approval.

On motion of Whelpley, seconded by Anderson, the meeting adjourned at 5.40 P.M.

(*Motion 45.*) *It is moved by Anderson that the minutes of the meeting of the Executive Committee as presented herewith be approved by the Council and that the decision of the Executive Committee become the decision of the Council.*

92. The following letters have been received from Chairman DuMez of the Publications Committee:

(1) "I have this day informed John Jos. McVey that as Chairman of the Publication Committee I can see no reason why he should not be given permission to use portions of the text of the National Formulary for comment in the third edition of Ludy's 'Answers to Questions Prescribed by Pharmaceutical State Boards,' but that it will first be necessary for the Council to act on the matter.

"I have also advised him that it is customary to charge a nominal fee of $5.00 for the use of the text in this manner and that it should be sent to you.

(2) "I have looked over the portion of the manuscript enclosed by Dean Homer C. Washburn with his request for permission to use portions of the text of the National Formulary for comment. Since there does not appear to be anything unusual in the request, I am not submitting the matter to the Publication Committee for a vote but wish to recommend to the Council that permission be granted Dean Washburn to use the text in the manner requested, and that he be charged the customary fee of $5.00.

"I have written Dean Washburn in reply to his communication of the 10th inst. addressed to you and informed him that the matter would be placed before the Council for a vote and that you would notify him just as soon as definite action had been taken."

(*Motion 46.*) *It is moved by DuMez that John Jos. McVey, Philadelphia, Pa., and Homer C. Washburn, Boulder, Colo., be granted permission to use the text of the N. F. V for partial reproduction in Ludy's "Answers to Questions Prescribed by Pharmaceutical State Boards," and in a textbook on Pharmacognosy by Washburn, respectively, and at a charge of $5.00 in each case.*

93. Applicants for Membership. The following applications properly endorsed and accompanied by the first year's dues have been received:

No. 128, James Marvin Brooksbank, 306 S. Campbell St., Springfield, Mo.; No. 129, Harold John Engstrom, Chippewa Road, Mahegon Heights, Tuckahoe, N. Y.; No. 130, Ralph H. Estabrook, Worcester City Hospital, Worcester, Mass.; No. 131, George J. Ettenberg, 2323—82nd St., Brooklyn, N. Y.; No. 132, Donald Remley Everitt, 744 W. Edwin St., Williamsport, Pa.; No. 133, Flack C. Hedley, 4219 Cadillac Ave., Detroit, Mich.; No. 134, Walter Edgar Gurske, 421 West Allen Street, Springfield, Ill.; No. 135, Henry Dunn Hughes, 3901—14th St., N. W., Washington, D. C.; No. 136, Raymond Daniel Kinsey, 224 Eighth St., S. W., Washington, D. C.; No. 137, George Lordi, 235 Jefferson St., Newark, N. J.; No. 138, Arthur Joseph McKay, 1339 Purchase St., New Bedford, Mass.; No. 139, Lloyd Nicholas Richardson, Bel Air, Md.; No. 140, Robert Savage, 29 S. Calverton Road, Baltimore, Md.; No. 141, Olivias Harris Williams, 11656 Pinehurst St., Detroit, Mich.

(*Motion 47.*) *Vote on applications for active membership in the American Pharmaceutical Association.*

94. Applicants for Membership on Account of Contributions to the Headquarters Building Fund. The following non-members of the A. PH. A. have pledged $25.00 or more to the Headquarters Building Fund and have made a cash payment of $5.00 or more. They are entitled to membership and you are requested to vote on the applications which have been properly endorsed.

H-251, A. Wm. Biebesheimer, 934 Tentonia Ave., Milwaukee, Wis.; H-252, J. H. Coleman, Cor. 6th & Higgins Ave., So., Missoula, Mont.; H-253, Lawrence R. Dry, 614 S. Ashland Boulevard, Chicago, Ill.; H-254, Jeanne M. Feugas, 2515 E. Grand Ave., Everett, Wash.; H-255, Elizabeth M. Kieradle, 10616 S. Indiana Ave., Chicago, Ill.

(*Motion 48.*) *Vote on applications of contributions to the Headquarters Building Fund for Membership in the American Pharmaceutical Association.* E. F. KELLY, *Secretary.*

A SESQUI-CENTENNIAL BOOKLET.

A very interesting booklet describes the Sesqui-Centennial International Exposition which opened with formal ceremonies May 31. It is to be hoped, and probable, that members of the AMERICAN PHARMACEUTICAL ASSOCIATION will receive a copy of this booklet. Besides giving information relative to the Exposition some of the sketches are artistic in design.

MERCER'S APOTHECARY SHOP AT FREDERICKSBURG, VA.

Elsewhere in this issue of the JOURNAL there is interesting matter relative to Mercer's Apothecary Shop at Fredericksburg, Va. The writer has acquired an invoice from this drug store from about the time that the firm was changed from Mercer and Clement to Mercer and Julian. The store was owned by Mercer and Clement from 1771 to 1773, and the invoice referred to is really a statement about the time of the change, November 1773. The partnership was dissolved about the time that Dr. Mercer joined the Continental army in 1776. The statement was rendered to William Fitzhugh at Chatham just across the river from Fredericksburg where George Washington went courting in his young days. The antiquity of the document is attested by the water marks in the paper which are that of the time of George II.

The total of the bill rendered is for 22 pounds, 18 shillings and $1^1/_2$ pence, and on November 26, 1773, a cash credit is entered as paid to Dr. Mercer of 15 pounds, 15s 6d.

Among the items of the bill are febrifuge powders, 7/6; diaphoretic drops, 6s.; emp. epispast., 2/6; astringent mixture, 1/9; nitre, magnesia, electuary, liq. laud., and camphor liniment are mentioned a number of times; spermaceti is given as two words, namely, Sperm Ceta.

EDITORIAL NOTES

Editor: E. G. EBERLE, 10 West Chase St., Baltimore, Md.

Members of the Council, A. PH. A.: S. L. HILTON, *Chairman;* W. C. ANDERSON, *Vice-Chairman;* E. F. KELLY, *Secretary;* JAMES H. BEAL, CHARLES H. LAWALL, HENRY M. WHELPLEY, H. V. ARNY, A. G. DUMEZ, H. C. CHRISTENSEN, JULIUS A. KOCH, ROBERT P. FISCHELIS. *Ex-Officio:* L. L. WALTON, President; Vice-Presidents, W. C. ANDERSON, CLYDE L. EDDY; E. F. KELLY, Secretary; C. W. HOLTON, Treasurer; WILLIAM D. JONES, Chairman of the House of Delegates. Editors of the JOURNAL and YEAR BOOK: E. G. EBERLE and A. G. DUMEZ. Committee on Publications: A. G. DUMEZ, *Chairman;* R. P. FISCHELIS, H. V. ARNY, H. M. WHELPLEY, E. F. KELLY, C. W. HOLTON, E. G. EBERLE.

Collaborators: The Members of the Council; the Editor of the YEAR BOOK, A. G. DUMEZ; E. FULLERTON COOK, Chairman, U. S. P. Revision Committee; W. L. SCOVILLE, Chairman, N. F. Revision Committee; the Chairmen of the Sections, A. PH. A.: F. F. BERG, J. G. BEARD, H. C. NEWTON, AMBROSE HUNSBERGER, L. K. DARBAKER; WILLIAM D. JONES, Chairman of the House of Delegates, A. PH. A.; EDWARD H. KRAUS, President, A. A. C. P.; CHARLES B. JORDAN, Chairman Executive Committee, A. A. C. P.; M. N. FORD, President, N. A. B. P.; HENRY C. CHRISTENSEN, Secretary, N. A. B. P.

BULLETINS OF THE DRUG TRADE BUREAU OF PUBLIC INFORMATION.

Director Robert P. Fischelis has issued bulletins D-19 to D-23A, of the Drug Trade Bureau of Public Information.

Bulletin D-19 makes extended references to the work which will occupy those who attend the meetings of the AMERICAN PHARMACEUTICAL ASSOCIATION, the National Association of Boards of Pharmacy, the American Association of Colleges of Pharmacy, the Research Conference, and the National Association of Retail Druggists.

Bulletin D-20 relates also to the meetings in Philadelphia and with particular stress on the Headquarters Building for American Pharmacy, President L. L. Walton is quoted.

Bulletin D-21 refers to the Western China School of Pharmacy at Chengtu. Prof. E. N. Meuser speaks of this school as the only one in an area with a population equal to that of the United States and Canada. Reference to Prof. Meuser's work was made in the April JOURNAL, p. 319. The Bulletin refers to scholarships which the school hopes to establish for worthy students. They will be awarded to students showing the highest general proficiency. Suggestions are made for various endowments.

Bulletin D-22 gives a discussion of the Kindred Bill, relating to the production and distribution of narcotics. Secretary Samuel C. Henry of the N. A. R. D. states that the bill provides for the establishment and operation of a Federal Narcotic Bureau under five directors. The bill provides for defraying the expenses incidental to the organization of the Bureau, amounting to $250,000. Mr. Henry questions the advisability of further interference on the part of the government in matters so directly related to the life of suffering humanity. It may be questioned whether the provision contemplated would really prove to be a benefit to the latter. Doubt will arise as to the possibility of the government going into the manufacture of narcotics with operating costs comparable with those of chemical manufacturers.

Bulletin D-23 informs the laity of the award of the Remington Honor Medal to Dr. H. A. B. Dunning of Baltimore. The formal presentation was made by the New York Branch on May 12. The address of the Medalist will be found in this issue of the JOURNAL.

Bulletin D-23 also relates to the award of the Remington Honor Medal and particularly to the program of the occasion.

Director Robert P. Fischelis of the Drug Trade Bureau of Public Information addressed the Baltimore Branch, May 25, on "Pharmacy's Message to the Public," at which time he exhibited many clippings showing the extensive publicity which is being given to the drug industries through the Drug Trade Bureau of Public Information. He also gave a history of the organization and its development.

Mrs. Fischelis came to Baltimore with Dr. Fischelis and attended the Branch meeting.

Bulletin D-24 issued a picture of Dr. H. A. B. Dunning, Remington Medalist for 1926.

Bulletin D-25 is addressed to Pharma-

ceutical Journals only and refers to the progress made in the arrangements for the meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, in Philadelphia, and advises relative to the local committees of the Convention. Each committee chairman is given power to select his own committee. Big preparations are being made by the Philadelphia Branch and a large attendance is expected, not only on account of the importance of the meeting but also because of the International Exposition in Philadelphia, which will probably be at its best during the month of September.

Bulletin D-26 relates to "plugging" schools which enable untrained men to pass State Board examinations and become registered pharmacists and menace the nation's health, made in a report by Prof. Zada M. Cooper of the University of Iowa. The greater part of an article on the subject by Prof. Cooper will be found on pp. 1130–1133 of the December number 1925 JOURNAL, A. PH. A.

THE HUMAN FACTOR IN BUSINESS.

Prof. S. S. Huebner, of Insurance and Commerce, University of Pennsylvania, said in a recent contribution to the Philadelphia Evening Ledger that the modern trend in life has been the encouragement and development of the individual and a searching for the proper avenue through which he can best express himself and contribute his utmost to humanity. The following paragraphs are quoted from the article:

"A knowledge of the outstanding facts and a thorough understanding of fundamental principles and practices prevailing in any type of business underlie all specialization, it is true, and are important as a means to an end. But they are only a means, and the end consists in their being used as tools in such a way as to develop our capacity to think and to work creatively. In the specialized courses, therefore, in the seminar and with respect to the graduation thesis, boundless time should be given to our development in the careful accumulation of data and its correct interpretation.

"We should train ourselves by oft-repeated trial, into the habit of research, which may be defined as the thorough accumulation, interpretation and marshaling of facts, by individuals accustomed to and trained in such work, with a view to reaching some new and worth-while conclusion in the particular subject under consideration.

"Our power to research in the facts of our calling needs to be developed because it is the greatest single power that we can acquire for future vocational usefulness and happiness. Fact-learning in itself may not amount to much because facts are usually fleeting in character. But the spirit for inquiry and the method of approach acquired through frequently repeated endeavor at research and experiment are sure to stay with us as a personal characteristic, ever available to fortify our judgment and to enhance our power to meet problems as they arise."

TERCENTENARY OF FRANCESCO REDI.

Italy celebrated the tercentenary of Francesco Redi, February 18. He was a physician, naturalist, poet and philologist. He asserted the therapeutic value of cinchona against the opinions of physicians of his time and taught simplicity in therapy.

CLEVELAND MUSEUM EXPEDITION.

The little schooner, "Blossom," owned by the Cleveland Museum of Natural History, which sailed from New London, Conn., on a scientific expedition October 29, 1923, returned to the latter port June 5. More than 4000 specimens of plant and animal life were brought back from the distant points reached by these scientists. Of the crew of college men who started with the expedition only four remained throughout the voyage, including Capt. George Finley Simmons and W. Kenneth Cuyler, of the Department of Zoölogy at the University of Texas, who served as biologist of the expedition.

GRADUATE LIBRARY SCHOOL.

The Carnegie Corporation has donated $1,385,000 for the establishment of a graduate library school at Chicago. According to an announcement by President Max Mason, the funds have been provided to meet an urgent need which has been disclosed in a recent study of the library situation in America conducted by the American Library Association and Carnegie Corporation. There will be established, as a result of the grant, a School of Library Science of new character and purpose which will emphasize the broad principles of library work and its relation to society, as well as technical fundamentals.

FIRST FREE LIBRARY IN AMERICA.

The little brick building, shaped like a Greek cross, which housed Queen Anne's gift of 1000 books, still stands on the State House Hill in Annapolis. It is the oldest public library building in the country and probably the oldest public building still standing and in use. The library was established prior to 1700 and 457 volumes remain of the old library, stored in Woodward Hall in the Library of St. John's College. Dr. Thomas Bray was assigned the duty of establishing libraries in Maryland. Between 1695 and 1699 he had expended more than $12,000 which went into the making of thirty libraries in various towns.

PERSONAL AND NEWS ITEMS.

Prof. Charles R. Richards, Director of the American Association of Museums has received the decoration of the Legion of Honor from the French government.

A Commission appointed by the Medical Society of Virginia has authorized the purchase of the little frame building at Belroi in which Walter Reed was born, as a memorial to the discoverer of the means of transmission of yellow fever.

A. John Schwarz, of Indianapolis, addressed the classes in Pharmacognosy of the Pharmacy Department of Purdue University on May 14th. His subject was "Commercial Aspects of Crude Botanical Drugs."

Ex-President John Uri Lloyd, A. PH. A., was the speaker at a special meeting of the officers and faculty of the Philadelphia College of Pharmacy and Science, June 2nd; the subject of his address was "Some New and Interesting Phases of Colloid Chemistry."

Dr. Chen of Peking, Professor of Pharmacy, who is taking a post-graduate course at the University of Wisconsin, will address the members of Wisconsin Pharmaceutical Association at its meeting in La Crosse, June 23–24.

Emil L. Boerner, first dean of the College of Pharmacy of the University of Iowa, celebrated his fiftieth anniversary as pharmacist in Iowa City, Iowa. Mr. Boerner became head of the College of Pharmacy when it was established in 1885, and held the office for 29 years. He is now *Professor Emeritus.*

John J. Possehl of Milwaukee and Mrs. Possehl celebrated their twenty-fifth wedding anniversary with a dinner and dance on May 8th.

J. Fuller Frames has been reappointed a member of the Maryland Board of Pharmacy by Governor Ritchie, to succeed himself. He is now President of the Board.

Samuel H. Williams, veteran druggist of New Haven, Conn., was elected Grand Commander of Connecticut Commandery, Knights Templar.

Ex-President H. V. Arny, of the A. PH. A., is to be a speaker at the annual meeting of the Canadian Pharmaceutical Association.

Euclid Snow, of Mallinckrodt Chemical Works, has donated "Essays on Materia Medica," by G. W. Carpenter, to the AMERICAN PHARMACEUTICAL ASSOCIATION. The book was published in Philadelphia, in 1834.

Miss B. Olive Cole, Secretary of Baltimore Branch, A. PH. A., of the faculty School of Pharmacy of the University of Maryland and Assistant Professor, will represent the Baltimore Quota Club at the convention of the Quota Club International, in Philadelphia, June 10 and 11. Miss Cole is President of the Baltimore Quota Club.

H. A. Schuette, Professor at the University of Wisconsin, reported at a regional meeting of the American Chemical Society that search for a substitute for alcohol as a solvent in flavoring extracts had so far been in vain. Each solvent had some deterrent to its general use—one type separated very soon into its components, another was not soluble, etc.

Chairman E. Fullerton Cook, of the U. S. P. Revision Committee, has sent a note to the Editor, while *en route* to Switzerland and on board the S. S. "De Grasse." Among the acquaintances made by Professor Cook is a young doctor, who is on his way to Africa for the study of tropical diseases; he remarks on the common interest of science and service. Professor Cook and family will remain in Europe for a year or more.

The Editor has received through Frater **Wilhelm Bodemann** a "round robin" birthday greeting signed by himself, John Blocki, William B. Day, E. H. Ladish, R. E. Rhode, Frank Schrage, Andrew Scherer, C. A. Storer, Carl A. Abrahamson, James P. Crowley, E. von Hermann, Chas. E. Matthews, Geo. H. Wright, Theophilus Schmidt, L. P. Larsen, Richard Merz, Geo. W. Haering, E. D. Irvine, Frank H. Ahlborn, Iver Quales, and some others whose signatures are not quite as readable as those of Fra. Bodemann. To all of them the editor expresses fraternal greetings and appreciation of their thoughtfulness, and wishes for them the additional number of

years attained by him and then some more, provided they may have health and prosperity along with these additional years.

Charles W. Parsons, who succeeded Caswell A. Mayo as editor of the *American Druggist* a number of years ago, has terminated his connection with the latter publication and accepted a position with E. R. Squibb & Sons. **Caswell A. Mayo,** for the past year dean of New Jersey College of Pharmacy and the predecessor of Editor Parsons, assumes the editorship of the *American Druggist.*

Dr. K. K. Chen—a Chinese government scholar at the University of Wisconsin, who will take up further studies at Johns Hopkins—has brought out new uses for ephedrine—arresting hemorrhages, maintaining circulation, etc. He contributed an article to the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION for March 1925, on the pharmacognostic and chemical study of *Ephedra vulgaris* var. *helvetica.*

Prof. Otto Raubenheimer and family will leave this month for an extended trip to Europe, visiting in Germany, Switzerland and Holland. Naturally, Prof. Raubenheimer will call on teachers in pharmaceutical institutions, the museums and libraries of pharmacy, and publication offices. He promises to bring back with him much interesting information for publication in the pharmaceutical press, and the JOURNAL hopes to be favored. We wish for him and his family an enjoyable trip and safe return.

E. L. Newcomb will speak on "Price Standardization," and **Clyde L. Eddy** on "Chain Stores and Modern Merchandising Tendencies," before Virginia Pharmaceutical Association, at Bedford, June 15–17.

Gordon A. Bergy will give "Some Side Lights on the Prescription Department;" **J. Lester Hayman** will discuss "Advertising and Show Cards," and **W. Russell Green** will speak of "The Romance in Your Job" at West Virginia Pharmaceutical Association meeting at Charleston, W. Va., June 21–24.

Carl Weeks and **J. A. Riedel** will address the Wyoming Pharmaceutical Association, meeting at Sheridan, June 22–24.

Prof. F. J. Blumenschein, of the faculty of Pittsburgh College of Pharmacy, has purchased a drug store at Uniontown, Pa., where he is now located.

Governor Albert Ritchie, of Maryland, will be chief guest of the Maryland Pharmaceutical Association on "Governor's Night," June 23, at Buena Vista Hotel. He also will deliver an address on the following day. A large attendance is assured; the percentage of membership in the State Association, through the energetic work of President Harris and his coworkers, is going above 85% of all active pharmacists of the State; outside of Baltimore the membership is nearly 100 per cent.

Jacob Diner, E. L. Newcomb, Ambrose Hunsberger and **Samuel L. Hilton** will be among the speakers at the New Jersey Pharmaceutical Association meeting, to be held in Hotel Chelsea, Atlantic City, June 8–11.

Charter Members of Connecticut Pharmaceutical Association will be guests of the ASSOCIATION at its "golden anniversary" meeting in Hotel Stratfield, Bridgeport, June 29–30.

The name of Wallace James will be inscribed on a tablet of the new Union Building as the winner of the highest honors of the year at the University of Kansas, he was voted the title as the graduate whose influence was "most wholesome and helpful in the life of the University" judged on a basis of character, scholarship and unselfish service.

Among recent visitors at the office of the Secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION and of the JOURNAL were the following: **J. C. Peacock, E. L. Newcomb, E. S. Sater, F. W. Sultan, C. E. Caspari, W. Bruce Philip.**

The Red Cross Messenger for June describes a number of interesting window displays which are suggestive for Pharmacy week of this year.

The June *Scientific Monthly* has an interesting story of Yale's Great Museum; an excellent halftone of Prof. Benjamin Silliman is included, and of the memorial to James Dewar, recently unveiled in the Royal Institution of London, also of the bust of Luther Burbank by the sculptor, Roger Noble Burnham.

The *Pennsylvania Pharmacist* for May contains a tentative program of the State Association meeting; a large number of papers have been sent in and more have been promised. The issue contains a helpful article on the A. PH. A. Headquarters by Chairman P. Henry Utech; messages from Secretary Samuel C. Henry, N. A. R. D., and Secretary E. F. Kelly of the A. PH. A. and from the Committee on Public Information. The interesting number has been edited by Dr. Robert P. Fischelis and is replete with information for the members. The annual meeting of Pennsylvania Phar-

maceutical Association will be held in Buena Vista Springs Hotel, June 15–17.

The *Official Reference Book and Guide* of Bronx County Pharmaceutical Association, to which reference heretofore has been made, is now off the press. Quite a number of interesting and informative articles are contained along with a directory of membership, and officers and association news.

Schering & Glatz, Inc., have moved their general offices, laboratories, manufacturing, shipping, billing and purchasing departments. These will be located at the recently enlarged plant, 84–92 Orange St., Bloomfield, N. J.

OBITUARY.

ROSCOE EDWARD DOOLITTLE.

Roscoe E. Doolittle, for many years identified with the enforcement of the Federal Food and Drugs Act, died April 25 at his home in Evanston, Ill. He was born at Fowlerville, Mich., January 16, 1874. He was graduated from the Michigan Agricultural College in 1896, afterward taking a special course in food analysis under the late Dr. Albert B. Prescott. He then became an assistant chemist in the Michigan Dairy and Food Department. From 1899 to 1904 he was State chemist. In the latter year he was appointed to take charge of the New York laboratory of the Bureau of Chemistry, which position he retained until 1911, when he became a member of the Board of Food and Drug Inspection in Washington. On the resignation of Dr. H. W. Wiley, Mr. Doolittle was designated acting chief of the Bureau of Chemistry. In 1917 he became the first chief of the Eastern District of the Bureau of Chemistry, and from the close of that year until his death he was chief of the Central District, with headquarters in Chicago.

During his twenty-two years' service in the Bureau of Chemistry, an important part of his activity was the training of men to carry on the work of the Bureau. For many years he has taken an active part in the committee work of the Association of Official Agricultural Chemists, and in recent years has been chairman of its Committee on Editing Methods of Analysis. The volume of methods that has been published under his direction is a monument to his memory.

He has been a member of the Joint Committee on Definitions and Standards of the A. O. A. C. since 1921, and was President of that association in 1924.

The deceased joined the AMERICAN PHARMACEUTICAL ASSOCIATION in 1909, and as coauthor of a number of papers contributed to the JOURNAL, A. PH. A. He was also a member of the American Chemical Society, Society of Chemical Industry, American Association for the Advancement of Science and American Public Health Association.

PHILIP JACOB ACKERMAN.

Philip J. Ackerman, member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1906, died in the White Cross Hospital, Columbus, Ohio, May 10, aged 71 years.

The deceased had been in the drug business in Columbus for over half a century. He is survived by his widow and a son, Graham B. Ackerman.

SOCIETIES AND COLLEGES.

HEADQUARTERS PROGRESS.

Assistant Publicity Director E. S. Sater has sent a letter to the JOURNAL Office, in which he expresses his satisfaction in a most successful campaign in Georgia and Florida. The leading retail pharmacists in Atlanta subscribed to and backed the headquarters project. The students of Atlanta College of Pharmacy registered 100% in subscriptions; not one failed in contributing thereto. Dean R. C. Hood, Thomas Marshall, J. T. Solomons and Messrs. Owens, Jacobs, Bell, Pendergras, Munn and Brennan aided in creating support and interest and by personal contributions. All of the students at the University, Athens, contributed and made up in enthusiasm for what they lacked in numbers.

The pharmacists of Jacksonville, retailers and wholesalers, entered whole-heartedly into the campaign. The support given was so unanimous that there is possibility, without intention, of naming one above another in loyalty and enthusiasm. The names mentioned do not include all who coöperated and represent only a part of those who subscribed: W. D. Jones, D. W. Ramsaur, J. K. Atwood, W. A. Mahoney and Mr. Bridges. "Up to the present," Mr. Sater writes, "the sub-

scriptions from Florida have been increased by $3000 and I am looking forward to equally good results in Miami, Tampa and St. Petersburg."

The students of the University of Florida with all of the members of the faculty and the dean of the Pharmacy Department made their subscriptions a unanimous proposition, and brought the satisfaction of Mr. Sater to "high point."

THE SESQUI-CENTENNIAL AND THE AMERICAN PHARMACEUTICAL ASSOCIATION MEETING.

The time of the meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION is approaching by strides. Tentative programs of the Sections should be printed in the July issue of the JOURNAL.

A letter soon will be addressed to members, through the office of Local Secretary Ambrose Hunsberger, advising them of the entertainment features during convention week and giving them also other necessary information.

The entertainment program is nearly complete and includes visits to historic points in and about Philadelphia, the Sesqui-Centennial, drives through the city and suburbs, shopping tours, luncheons, dances, special trips for groups, etc.

There is much to be seen in and about Philadelphia that connects not only the history of this country with the present, but also the foundation of American pharmacy and the AMERICAN PHARMACEUTICAL ASSOCIATION. This is the opportunity for combining vacations with convention attendance, for the National Association of Retail Druggists will hold its annual meeting during the week following that of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Further references to the A. PH. A. meeting will be found under "Local Branches"—Philadelphia.

OPENING OF THE SESQUI-CENTENNIAL IN PHILADELPHIA.

The Editor was honored by receiving an invitation and was present at the opening ceremonies of the Sesqui-Centennial. While there is still much work to do before the exposition features are completed, their immensity is in evidence and they promise to be intensely interesting and instructive.

Dean Charles H. LaWall is Chairman of the Committee which will prepare and be in charge of the exhibit that is to portray the progress of pharmacy during the past 150 years. Other members of the Committee are: Joseph W. England, Robert J. Ruth, W. L. Cliffe, Charles C. Pickett, C. Mahlon Kline, John R. Minehart, Ambrose Hunsberger, Adley B. Nichols, Ralph Calvert, R. R. Foran, Ivor Griffith, C. S. Cameron and J. W. E. Harrisson.

AMERICAN PHARMACEUTICAL MANUFACTURERS MEET AT LAKE PLACID.

The nineteenth annual meeting of the American Pharmaceutical Manufacturers' Association is now in session at Lake Placid, N. Y. Through the courtesy of Charles Wesley Dunn, general counsel for the association, members will be entertained at the Lake Placid Club.

In addition to the business and special educational sessions of the convention there will be a golf tournament, automobile excursions, boating, and various other sports and entertainments for ladies, guests and members. Sociability and recreation are prominent features of the program.

PROPRIETARY ASSOCIATION.

At the forty-fourth annual meeting of the Proprietary Association held in Hotel Pennsylvania, New York City, May 11 and 12, the following officers were elected: *President*, Frank A. Blair, New York City; *First Vice-President*, E. K. Hyde, Buffalo; *Second Vice-President*, J. H. Howe, St. Louis; *Secretary-Treasurer*, Charles P. Tyrrell, Syracuse.

At the opening session greetings from other associations were brought by Dr. Robert P. Fischelis, for the AMERICAN PHARMACEUTICAL ASSOCIATION; J. H. Foy, for the American Pharmaceutical Manufacturers' Association; S. B. Penick for the American Drug Manufacturers' Association; Henry Miles and Leo D. Ryan, for the Proprietary Association of Canada; and G. Barret Moxley, for the National Wholesale Druggists' Association. A telegram from Samuel C. Henry, Secretary of the National Association of Retail Druggists, expressed his regret at being unable to be present.

President Blair reviewed the activities of the association; Counsel Harry B. Thompson discussed legislative problems; Ervin F. Kemp brought in the report of the Requirements Committee and of the relations with the Bureau of Chemistry.

OFFICERS OF CANADIAN PROPRIETARY ASSOCIATION.

The following officers were elected at the 30th annual meeting of the Proprietary Association of Canada, held in Montreal, June 19: *Honorary Presidents*, Henry Miles, Montreal; W. J. Fraser, Toronto; *President*, L. G. Ryan, Montreal; *First Vice-President*, T. E. Milburn, Toronto; *Secretary-Treasurer*, John Donaghy, Montreal.

INTERNATIONAL DENTAL CONGRESS IN PHILADELPHIA.

Nearly all countries will be represented at the Dental Congress in Philadelphia, during the week of August 23. Among many from foreign countries to be in attendance will be Dr. B. Gottlieb, of Vienna, noted authority on pyorrhea.

The historical exhibit will be of general interest and will include the collection of Dr. V. Guerini of Naples, in which there are relics of the earliest known practice, among them instruments used by the ancient Egyptians and Etruscans. Instruments associated with early American dentists also will be exhibited.

OFFICERS OF ARKANSAS PHARMACEUTICAL ASSOCIATION.

At the forty-fourth annual meeting of the Arkansas Pharmaceutical Association, held in Little Rock, the following officers were elected: President, P. R. Turner, of Marianna; *Vice-Presidents*, Herbert Parker, Jonesboro; H. H. Heard, Arkadelphia; *Secretary*, Miss Mary A. Fein, Little Rock; *Treasurer*, E. D. Oslin, Little Rock.

The silver cup, donated by the *Southern Pharmaceutical Journal*, for largest delegation at the convention was won by Pine Bluff. The 1927 meeting will be held in Fort Smith.

OFFICERS OF OKLAHOMA PHARMACEUTICAL ASSOCIATION.

Oklahoma Pharmaceutical Association held its annual meeting in Tulsa, May 11–13. The following officers were elected: *President*, Cecil Steward, of Tulsa; *Vice-President*, William Gray, Hydro; *Secretary-Treasurer*, Ralph Crosby, Oklahoma City.

President Caldwell urged greater interest in coöperative endeavor, and suggested that the Oklahoma Association be represented in association meetings of adjoining states by delegates. He gave considerable attention to methods for counteracting the effect of sales of medicines by house to house sale and by wagon.

Resolutions were adopted condemning the "bootleg" drug store, favoring a code of ethics, approving formation of county organizations, more and better publicity, and price maintenance.

Among the speakers of the convention were: John McNair, Nels Darling, Henry Faxon, W. N. McCutcheon, Charles Rodman, Edward Plaut, J. Will Kelley, G. Carter Harrison and E. C. Brokmeyer.

Gifts were made to the retiring President and Secretary.

Oklahoma City was selected for the next convention city.

TEXAS PHARMACEUTICAL ASSOCIATION.

The largest attendance in the history of the Texas Pharmaceutical Association, probably 1500 to 1700 from every part of the State, is expected for the annual convention which will be held here at the Baker Hotel, Dallas, June 15 to 17, according to Walter D. Adams of Forney, Secretary-Treasurer of the organization.

One of the features of the convention this year will be the augmented exhibition of accessories and equipment, the entire mezzanine floor of the hotel being given over to the displays by local and out-of-state concerns catering to the needs of the druggists.

INAUGURATION CEREMONIES AT THE MEDICAL COLLEGE OF VIRGINIA.

William Thomas Sanger was installed as President of the Medical College of Virginia, May 31. The installation exercises were held at the Lyric Theatre at which the Governor of Virginia, Hon. Harry Flood Byrd, presided. After the invocation by Dr. F. W. Boatwright, President of the University of Richmond, Mr. Eppa Hunton, Jr., Chairman of the Board of Visitors, introduced the President, who delivered his inaugural address. Dr. Samuel Capen, Chancellor of the University of Buffalo, was introduced as the next speaker, by Dr. B. M. Randolph of George Washington University. Music by the College Orchestra interspersed the numbers of the inauguration program, and Dr. Paul H. Bowman, President of Bridgewater College, pronounced the benediction.

A buffet luncheon was served in the Winter Garden of the Richmond Hotel following the morning exercises; where also, at a later hour,

a reception was given President and Mrs. Sanger.

Chairman Eppa Hunton, Jr., of the Board of Visitors, presided at the Dinner; the speakers of the evening were Dr. Stuart McGuire, retiring President of the College; **Dean Charles B. Jordan,** of Purdue University School of Pharmacy; Dr. J. C. Flippin, Dean of the Department of Medicine, University of Virginia; Miss Ethyl Smith, Secretary of the Virginia State Board of Examiners of Nurses, and Dean Charles R. Turner, of the School of Dentistry, University of Pennsylvania.

Respectful acknowledgement is made of an invitation to be present at the installation ceremonies and other functions of the inauguration.

SCHOOL OF PHARMACY, UNIVERSITY OF MARYLAND.

The Faculty and Alumni Dinner of the School of Pharmacy, University of Maryland, was held at Hotel Rennert, June 4.

The toastmaster, Frank L. Black, presided with dignity and performed the duties in a most happy manner; the welcoming address was made by the Dean, Dr. A. G. DuMez, and among other speakers were the following: the President, Dr. A. F. Woods, of the University of Maryland; S. M. Shoemaker, of the Board of Regents of the University; Morris Yarmack, for the graduating class; the President of Maryland Pharmaceutical Association, Samuel Y. Harris; Dr. R. L. Swain, of the Maryland Board of Pharmacy, and R. E. L. Williamson, of the Committee on School of Pharmacy. Secretary E. F. Kelly spoke for the AMERICAN PHARMACEUTICAL ASSOCIATION, and Dr. D. M. R. Culbreth made the address for the *Alma Mater*.

All of the speakers had messages for the student body and guests. The entertainment was interesting and enjoyable and the program throughout well balanced. Leroy Oldham presented a number of negro stories in his matchless way, because he gives them the genuine touch of life; the vocal and instrumental music by Mrs. R. Rysaner Toula, Nathan Snyder and the St. John's Collegians gained the applause of those who attended the delightful function.

After the dinner was concluded, a reorganization of the Alumni of the School of Pharmacy was effected—William J. Lowry, Jr., was elected president and Prof. B. Olive Cole, Secretary.

COMMENCEMENT EXERCISES.

The Commencement Exercises of the School of Pharmacy, in connection with the Nurses, Medical, Law, and Business Departments were held at the Lyric, June 5. The music was under direction of Robert Paul Iula.

The address to the graduates was made by Dr. Harris Elliott Kirk; he admonished the graduates to become part of their studies and the work for which they have been prepared, and to perfect themselves in their respective activities.

The candidates were presented by the respective heads of the departments, and Dr. Woods, President of the University, conferred the degrees.

PHILADELPHIA COLLEGE OF PHARMACY AND SCIENCE.

The Commencement Exercises (105th) of Philadelphia College of Pharmacy and Science were held during the week of June 6th. The Baccalaureate Services were observed on Sunday, June 6, the annual business meeting of the Alumni was held Monday afternoon and at night the graduates were guests of the Faculty at a dinner, which function is an established custom dating back many years.

The annual reunion and family dinner of alumni and of alumnae was held at Benjamin Franklin Hotel on Tuesday night. The classes of the years ending in "6" and "1" were the honored children of this occasion. President W. Wilson McNeary referred to the alumni activities of the year and to the fine progress made with the Joseph P. Remington endowment under the direction of Dean Charles H. LaWall. He introduced the latter as toast master.

Officers-elect of the Alumni Association were announced as follows: *President*, Frank X. Moerk; *First Vice-President*, Mrs. Bertha L. de G. Peacock; *Second Vice-President*, Eugene G. Eberle; *Recording Secretary*, Joseph W. England; *Corresponding Secretary*, Edward T. Hahn; *Treasurer*, William H. Gano.

President Braisted reviewed the work of the college and visioned its future; the new building plans are being prepared by the architect. All classes were represented by speakers, those of fifty years ago—Drs. F. E. Stewart and William Duffield Robinson—spoke at greater length. Robert J. Ruth gave an interesting account of his recent tour of the States, visiting graduates of the College.

Music added to the program of the annual event and dancing closed the evening's entertainment.

BAYLOR UNIVERSITY COLLEGE OF MEDICINE PROVIDES FOR PERIODIC HEALTH EXAMINATIONS.

Baylor University College of Medicine, Dallas, announces that it will establish a department of periodic health examinations in the outdoor dispensary of the University for the examination of apparently well persons, and that only persons entitled to free service will be admitted for examination. Beginning with the 1926–1927 session, all students admitted to the medical school will be required to submit to a complete health examination when admitted and annually until graduation; they will be required also to be vaccinated against small-pox when admitted, and will be urged to submit to vaccination against typhoid fever. This work will be done under the direction of the department of bacteriology, hygiene and preventive medicine, and comprehensive records will be kept on forms similar to those recommended by the American Medical Association for health examinations.

The importance of clean habits and freedom from disease of medical, dental and pharmacy students, and of nurses, cannot be too strongly impressed.

AMERICAN PHARMACEUTICAL MEMBERSHIPS AS PRIZES IN COLLEGES OF PHARMACY.

The awards of membership in the AMERICAN PHARMACEUTICAL ASSOCIATION to graduates by the Massachusetts College of Pharmacy were made as follows:

Prizes consisting of a nomination to membership and the first year's dues in the AMERICAN PHARMACEUTICAL ASSOCIATION are offered by several officers and teachers. These prizes are awarded to the members of the graduating class who have made good averages on the senior work in all subjects and also made exceptional records in individual subjects as noted.

I. Pharmacy; offered by Professor La Pierre, and awarded to Robert A. Repetto.

II. Analytical chemistry; offered by Dean Bradley, and awarded to Ruth E. Johnson.

III. Organic chemistry; offered by Treasurer Godding, and awarded to Joseph H. Seligman.

IV. Materia medica; offered by President Glover, and awarded to Irene L. Fugere.

The JOURNAL will be pleased to have the names of those awarded in other Schools and Colleges of Pharmacy and publish such announcements.

ALBANY COLLEGE OF PHARMACY.

As part of the commencement exercises of Albany College of Pharmacy ground was broken for the new college building. E. L. Newcomb was a speaker of the occasion; 198 diplomas were granted.

MEDICAL LIBRARY ASSOCIATION.

The twenty-ninth annual meeting of the Medical Library Association was held at Ann Arbor, Mich., June 7–9. Dr. Hugh Cabot, dean, University of Michigan Medical School, gave the opening address, and Dr. Frederick Tice, Chicago, President of the Medical Library Association, responded. Among others, the librarian of the University of Michigan, Mr. William W. Bishop, spoke on "The Present Status of International Bibliography in the Field of Science." At a reception on June 7 at the William L. Clements Library, Dr. Aldred S. Warthin demonstrated some unusual features in the Lewis Stephen Philcher collection of rare and early books in medicine.

RESEARCH.

Dr. Joseph H. Willets, director of the Department of Research at the University of Pennsylvania, writing in the *Philadephia Evening Ledger*, states that "there is scarcely a big business or industrial corporation that does not include in its organization a research department. We have so suddenly built such a large and complex economic and business life that we can only partially understand and control it. Science and its applications have so rapidly drawn the world together and molded civilization that our business and economic structure is subject to severe strains.

"If we are to make the best of this new world into which we have been catapulted and to which we are not adjusted, our judgments must be wise. The facts are so numerous and so complex, so much beyond the range of casual study, that wise judgments must be based upon systematic collection and study of all the facts. Our judgments must increasingly be based upon quantitative statistical data."

Dr. Willets cites that mathematical researches of Abbé transferred the making of optical lenses from England to Germany. Sicily's monopoly in sulphur was broken by the Frasch process, which, by the way, is a pharmaceutical method.

Harvard's Bureau of Business Research spends about $150,000 a year, most of its effort going into the collection of business cases to be used as case material for business instruction. We are familiar with the pharmacy survey made by Dr. W. W. Charters and his Committee, the results of which gave many a better understanding of pharmacy and will, very likely, result in a survey of the business side of the retail drug activities and profit those so engaged.

The Food Research Institute of Stanford University, in which our fellow-member Dr. Carl L. Alsberg is engaged, is spending $75,000 annually in conducting researches. In the Bureau of Chemistry, our venerable member, Dr. Frederick Power, is working out problems which have a direct and indirect value that is difficult to estimate, because their benefits are many-sided.

Discoveries in cancer research recently made in the Johns Hopkins Medical School are expected to prove of great value in finding the cause of the disease.

TEXAS PROVIDES FOR COMPULSORY VACCINATION OF DOGS AGAINST RABIES.

The paramount reason for Governor Ferguson's proclamation providing for compulsory vaccination of all dogs in Texas is to protect live stock in the State from being infected by rabid dogs.

It is to be hoped that the efficacy of rabies vaccine can be proven beyond reasonable doubt; there is danger in feeling secure—for a person bitten by a treated animal is assured of his or her safety because the vaccine protects the animal for a period of at least one year. Taken in time, the Pasteur treatment is efficacious but is dreaded by patients.

Objections will always be raised to compulsory requirements; the extent of objection differs—comparatively few will oppose compulsory small-pox vaccination, but almost the reverse is true relative to rabies vaccine. Some of the opponents consider that the comparatively few cases of rabies do not warrant the expense and inconvenience of the precautionary measure; these would change their minds if they ever witnessed the throes of an unfortunate victim. If there is no certainty of the effectiveness of the vaccine, misinformation should be corrected; we do not believe that responsible manufacturers will make stronger claims for the efficacy of the vaccine than can be proven.

BLOEDE AND HOFFMAN SCHOLARSHIPS.

Two scholarships worth $900 will be awarded this year by the Chemists' Club of New York to students in industrial chemistry and chemical engineering. One is the Bloede scholarship, with an income of $500, founded by Dr. Victor G. Bloede, of Baltimore, and the other the Hoffman scholarship, with an income of $400, endowed by William H. Hoffman of Newark. Competition is open to applicants in every State. Application should be made to the Chairman of the Committee, Dr. F. G. Zinsser, Hastings-on-the-Hudson, N. Y.

THE TWENTIETH ANNIVERSARY OF THE AMERICAN DRUGGISTS' FIRE INSURANCE CO.

The American Druggists' Fire Insurance Company celebrated its twentieth anniversary at Cincinnati during the week of May 24th.

During the business sessions addresses were made by President Avery of Chicago, President Dusterberg of the Cincinnati Branch of the A. Ph. A., President Dornheggen of the Ohio Valley Druggists' Association, E. H. Thiesing and Henry Pollack of Cleveland, President of the Ohio State Pharmaceutical Association. The Monday evening session was closed by addresses of Secretary Frank H. Freericks on "The Socialistic Trend in Underwriting" and on "The Origin, Organization and Aims of The American Druggists' Fire Insurance Company." Tuesday, Wednesday and Thursday were devoted to a discussion of the business problems of the Company and to the best ways and means of extending an even greater service to the retail drug trade of the country in connection with its fire insurance. The principal addresses and presentation of topics were made by F. J. Budelman of New York City, Walter Rothwell of Hatboro, B. M. Keene of Indianapolis, Ind., L. G. Heinritz of Holyoke, Mass., W. P. Starkey of Cincinnati, Charles H. Avery of Chicago, John H. Linnemann of Cincinnati and G. O. Young of Buckhannon, W. Va.

The Twentieth Anniversary celebration was honored and made particularly worthwhile by the presence of President Lucius

L. Walton and Secretary E. F. Kelly of The AMERICAN PHARMACEUTICAL ASSOCIATION and Chairman Julius H. Riemenschneider, of the Executive Committee of the N. A. R. D., who each at a luncheon tendered by the Company Thursday noon, presided over by L. G. Heinritz, graciously addressed the guests and dwelt upon the service which the Company had rendered to the retail drug trade of the country as well as upon the fact that it is unique in the history of coöperative effort, standing out as an institution of uninterrupted growth and success. At the luncheon, addresses also were made by Dr. Wm. C. Anderson of Brooklyn, who pointed out the agent's opportunity to serve in the cause of pharmacy and in the work of pharmaceutical associations; and finally by Dr. J. H. Beal who awarded the several prizes to the winners in an Agency Contest and in that connection made one of his most happy addresses. The Convention also was honored by the presence of President M. N. Ford, of the National Association of Boards of Pharmacy, and Secretary Herman J. Holthoefer, of the Chicago Retail Druggists' Association.

During the Convention the business sessions were interrupted from time to time by a show of Cincinnati hospitality: On Tuesday, the visiting ladies were entertained by the Cincinnati Chamber of Commerce under the direction of the City's official efficient and charming hostess, Miss Amy Pace. On Wednesday a luncheon was served at the Cincinnati Zoölogical Garden followed by a Sight-Seeing Trip of the city and its suburbs, tendered to the visitors by the Ohio Valley Druggists' Association and the Cincinnati Branch of the A. PH. A., under the direction of Edward Lehr. The entertainment program was concluded with an out-door dinner, served at the home of Secretary Frank H. Freericks, followed by an out-door performance of Shakespeare's "Winter's Tale" produced by the Schuster-Martin Dramatic School, through the courtesy of Mr. and Mrs. Freericks.

THE PHARMACIST AND THE LAW.

RESOLUTION ADOPTED BY THE WHITE CROSS INTERNATIONAL ANTINARCOTICS SOCIETY, 34 WEST 49TH ST., N. Y. C.

WHEREAS there was introduced in the Senate of the United States on April 19 (Calender day, April 24) 1926, a bill (S 4085) to strengthen the Harrison Narcotic Act of December 17, 1914, as amended; and

WHEREAS it would seem desirable for the Congress of the United States, in connection with the consideration of such proposed amendatory legislation, to review the field of narcotic regulation with a view to adopting legislation which will conform the regulation of such trade to the situation as developed by such an investigation,

Now, therefore, be it resolved, that the White Cross, Inc., request Hon. Reed Smoot, a member of the Senate, to secure opportunity for Hearings on Senate Bill 4085, at such time as will facilitate full representative expressions by those interested in the narcotic problem and, in case further inquiry is thought advisable, then Mr. Smoot is requested further to obtain a federal investigation, by a committee to be appointed for that purpose, of the narcotic situation in this country, with a view to obtaining a better understanding of the narcotic evil, and the adoption of such legislation as such an investigation will suggest.

The foregoing Resolutions were adopted at a meeting of the Board of Directors of The White Cross, Inc., International Antinarcotics Society, in New York City, May 1, 1926.

WM. K. MCKIBBEN, *Secretary.*

SENATE BILL 4085.

To strengthen the Harrison Narcotic Act of December 17, 1914, as amended, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Harrison Narcotic Act of December 17, 1914, as amended, be further amended as follows:

SEC. 1. Strike out the period at the end of the fourth paragraph of Section 1, substitute a colon, and add the following: "Provided, That any person addicted to the habitual use of opium or coca leaves, or any compound, manufacture, salt derivative, or preparation thereof, when such use is not in the course of professional practice only, shall not be allowed to register under this Act: And provided further, That in addition to any penalty which may be imposed under

Section 9 hereof, any person hereafter convicted of a violation of this Act shall not be granted registration under this Act for a period of one year from the 1st day of July next following the date of such conviction."

SEC. 2. That the second clause of the twelfth paragraph of Section 1 be changed to read as follows: "and the absence of appropriate tax-paid stamps from any of the aforesaid drugs shall be *prima facie* evidence of a violation of this section in the judicial district where such drugs are found by the person in whose possession the same may be found."

SEC. 3. Section 2, subsection (a), is hereby amended to read as follows: "To the dispensing or distribution of any of the aforesaid drugs to a patient by a physician, dentist, or veterinary surgeon registered under this Act in the course of his professional practice only: Provided, That no dispensing or distribution of the aforesaid drugs pursuant to the so-called ambulatory treatment for narcotic-drug addiction shall be construed to be in the course of his professional practice only: Provided, That such physician, dentist, or veterinary surgeon shall keep a record of all such drugs dispensed or distributed, showing the amount dispensed or distributed, the date, and the name and address of the patient to whom such drugs are dispensed or distributed, except such as may be dispensed or distributed in emergency cases only; and such record shall be kept for a period of two years from the date of dispensing or distributing such drugs, subject to inspection, as provided in this Act."

SEC. 4. Section 2, subsection (b), is hereby amended by inserting the following proviso after the first clause and before the first proviso thereof: "Provided, That such drugs shall not be sold, dispensed, or distributed under circumstances from which the dealer might reasonably deduce that the prescription was not issued by the physician, dentist, or veterinary surgeon in the course of his professional practice only: And"

SEC. 5. The first sentence of the second proviso of Section 6 is hereby amended to read as follows: "Provided further, That any manufacturer, producer, compounder, or vendor (including dispensing physicians) of the preparations and remedies mentioned in this section shall keep a record of all purchases, sales, exchanges, or gifts of such preparations and remedies in such manner as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, shall direct."

SEC. 6. That in the enforcement of the Act of Congress of December 17, 1914, known as the Harrison Narcotic Act, as amended, the provisions of section 3450 of the Revised Statutes shall apply, in so far as they are in any wise applicable thereto, and the said provisions of said section are hereby reënacted for that purpose.

HEARING ON HARRISON LAW AMENDMENTS.

At a hearing held by the Ways and Means Subcommittee of the House of Representatives, May 24, vigorous opposition was made to the Treasury Department bill to amend the Harrison Narcotic Law, by the AMERICAN PHARMACEUTICAL ASSOCIATION, represented by Samuel L. Hilton, Washington, D. C., and by the American Medical Association represented by Dr. W. C. Woodward, Chicago. Mr. Hilton sharply criticized the proposed provision which would require pharmacists to determine whether a physician's prescription was or was not issued in the course of professional practice and to refuse to fill such prescriptions as the pharmacist may reasonably suspect of not having been so issued. He said, "Why should the druggist be jailed for following orders?" He opposed the provision for keeping records—additional to those now required—because it would increase the cost of such medicines to the people; he asserted that it would take from three to six hours to find out whether the ordinary narcotic prescription is lawful. "If this requirement is enacted into law," Mr. Hilton said, "I shall surrender my narcotic license as a wholesaler. I would decline absolutely to fill such a prescription and thereby run a chance of violating the law. The keeping of records has gotten to be a bugaboo for the druggists. I spend three days out of the month in keeping my records. The extra help needed to keep the proposed record would not be justified by the business."

Dr. Woodward, representing the American Medical Association, stated that further regulation of the narcotic traffic by the federal government would jeopardize the present antinarcotic laws, and that the determination of who may practice medicine and who may dispense drugs belongs to the states. "But that does not leave Congress helpless," Dr. Woodward said. "It can coöperate with

the states. At present there are twenty-nine states and three territories which have specific regulations authorizing the revocation of licenses of physicians known to be drug addicts. We doctors approve of regulation through ordinary channels, through the states as at present, but we regard the proposed legislation as unwise." With respect to this refusal of registration to doctors known as drug addicts, Dr. Woodward continued, "The question arises, What is a drug addict, and how is that to be determined? The same penalty for a violation by a narcotic pedler would be laid on a physician who commits a minor infraction of the law, to wit, for forgetting to renew his license for a few days after it expired, and writing a prescription in that period. He would lose his practice for a year. Such a regulation would be a club held over the heads of doctors to compel them to compromise cases instead of defending themselves in court. If a trivial charge was placed against a doctor, he would readily compromise rather than run the chance of having his reputation questioned by an appearance in court on the charge of violating the Harrison act."

Dr. Woodward completed his testimony with a statement that the bill would not reach narcotic pedlers, and with a recommendation for a greater activity by the states in enacting narcotic laws directed at the addict. Horace W. Bigelow, Detroit, counsel for the American Drug Manufacturers' Association, and for Parke, Davis & Company, opposed the bill from the practical view of the manufacturer. He asserted that the expense of record keeping was enormous. "I think I can safely say," he said, "that our record keeping amounts to more than $100,000 a year. Now this bill would force us to duplicate the very records we are keeping. When we keep a record of sales to our various distributors that record is also one of purchases for them. The bill would make us keep another record of purchases at an additional cost of perhaps $25,000 a year."—From a report in *Journal A. M. A.*, June 5.

The amendment offered by Colonel Nutt is embodied in H. R. 11612. Chairman of the Council, S. L. Hilton, attended the hearings and in speaking of the amendments said that this had as a purpose the placing upon the druggist the responsibility of determining whether or not it is for so-called ambulatory treatment of narcotic addiction and makes the pharmacist responsible. It also requires that the pharmacist must keep more records and make entries of all purposes of exempted preparations and prohibits the dispensing of narcotics under circumstances where the dealer might reasonably deduce that the prescription was not issued in regular professional practice.

Two sections of the amendments have been cut out and another is subject to change.

NARCOTIC IMPORT ALLOTMENTS.

Plans relative to narcotic material imports during the fiscal year beginning July 1 and policies regarding allotment of such imports among American manufacturers of narcotic drugs were discussed at a meeting of the Federal Narcotics Control Board, experts' committee, May 27, at which all the manufacturers were represented. It was indicated afterwards that an important announcement would be forthcoming of interest among nations signatory to The Hague opium convention.

T. D. 3875.

D. H. Blair, commissioner of internal revenue, with the approval of Secretary Mellon of the Treasury Department, has issued a new order, T. D. 3875, relative to relief of sureties on bonds under Title 3 of the prohibition act. This decision amends article 119 of internal revenue regulations 61 relative to denatured alcohol, by adding the following paragraph:

"The surety on any bond submitted in accordance with the provisions of Title III of the National Prohibition Act, or Regulations No. 61, issued pursuant thereto, may at any time notify the principal and the Prohibition Administrator of the district in which the permittee is located, except as to taxfree withdrawals under paragraphs 3 and 4 of section 10 of the National Prohibition Act, in which case notice should be given the Collector of Internal Revenue that such surety desires, after a date named, which shall be at least sixty days after the time of notification, to be relieved of liability on the bond."

THERMOMETER TESTING IS PROVIDED FOR IN BILL.

Testing by the Bureau of Standards of every clinical thermometer before it can be sold in interstate commerce in this country is provided for in a bill reported favorably from the senate committee on interstate commerce by Senator Pittman of Nevada.

In his report he says that many thermometers on the market are so unreliable as to deviate from 2 to 5 degrees from actual temperature of the body. The report says further that the committee was convinced that "this is a matter of the greatest importance to the health and welfare—indeed to the very lives—of the people of the United States."

The committee had before it another bill providing for a system of licensing of clinical thermometers by the Bureau of Standards, which it did not favor. The bill reported is identical to one reported by the same committee last Congress, which passed the senate.—*Oil, Paint and Drug Reporter.*

PRIZES FOR PAPERS ON PRICE MAINTENANCE.

An offer of $10,000 in prizes for the thirty-eight best suggestions for a practical price maintenance plan has been made by the Lehn & Fink Products Company, New York.

Plans submitted must be comprehensive. They must cover a definite policy for the drug retailers, the jobber (both "service" and "mutual"), the manufacturer, the chain store, and the department store. They must consider the advisability of a resale price law. They must also cover a practical solution of the "free goods" and "hidden discount" problems, and they must be legal.

Plans should cover not alone the retail phases of the problem, but should take into consideration the manufacturer and wholesaler as well. In like manner, plans submitted by wholesalers must cover the manufacturer and retailer angles as well as their own.

THE PRIZES.

First award	$3000
Second award	2000
Third award	1000
Four $250 awards	1000
Ten $100 awards	1000
Twenty $50 awards	1000
Special award for professors and students of economics	1000

The regular contest is open to all distributors, both retail and wholesale; this includes any individual member of these firms.

The special contest is open only to professors and students of economics or marketing. The plans submitted for the special $1000 prize will be considered as separate and apart from the contest among wholesalers and retailers.

BOOK NOTICES AND REVIEWS.

Perfumes, Cosmetics and Soaps. By William A. Poucher, Ph.C., Consulting Perfume-Chemist. Two volumes. Volume I. Demy 8vo. IX, 304 pages, 24 illustrations. Volume II, XVI, 406 pages, 60 illustrations. $10 per set. Publishers, C. Van Nostrand Company, New York, 1926.

In this, the second edition of the well-known work by Poucher, the material of the earlier edition appears to have undergone an extensive revision and the scope has been considerably enlarged, particularly in the direction of the application of raw materials in the perfuming of soaps and tobacco. The large amount of new material which has been included is no doubt largely responsible for the publication of the work in two volumes instead of one volume as was formerly the case, although convenience to the user, from the standpoint of arrangement of the material, appears to have had its influence.

Volume I is essentially a dictionary of raw materials of value to the perfume chemist. As such it is most comprehensive, even the dyes used in the coloring of perfumes and cosmetics being contained therein. An admirable feature of this part of the work is the type formulas which are given for the preparation of perfumes, cosmetics and coloring materials. There can be little criticism of the volume from the standpoint of the manufacturer, but it is believed that its usefulness could have been considerably extended if more data on the physical and chemical constants had been included in the monographs on the individual items.

Volume II deals with the preparation of natural and artificial perfumes and the manufacture of all forms of modern cosmetics. Numerous formulas for the manufacture of articles of each type are given as well as detailed directions for their use. It appears that the information on these topics has been brought right up to date and that nothing of importance along this line has been overlooked.

The work as a whole is well done, the type is clear and the style is good. Some of the illustrations are rather poor, but on the whole they are sufficiently clear to bring out the points which they are intended to emphasize.

The two volumes contain much of interest

and value to the pharmacist and should find a place on the book shelf of every drug store.—A. G. DuMez.

Die Methoden der Organischen Chemie. Unter Mitwirkung von Fachgenossen, heraugegeben von Prof. Dr. J. Houben, o. Mitglied der Biologischen Reichsanstalt, a. o. Professor an der Universität Berlin. 3. Völlig umgearbeitate und erweiterte Auflage. I. Band. Allgemeiner Teil 1340 pp. mit 2 Tafeln und 851 Abbildungen. MK. 66—Verlag von Georg Thieme, Anton str. 15, Leipzig.

Only four years ago Vol. I of the second edition of this "masterwork" was published. Surely a testimonial of the popularity and value of the work. Houben's Methods of Organic Chemistry is one of the standard works on this subject.

Vol. I comprises the General Part and has been enlarged by the addition of three new chapters, namely "Interferometry," "Determination of Hydrogen-Ion Concentration" and "Determination of Molecular Compounds by Thermal Analysis," which brings the work right up to date, and which is the aim of the author and his collaborators, all authoritative on the respective subjects assigned to them.

Among the 46 chapters treated in this General Part, I want to point out the following, besides the three just mentioned: Elementary Organic Analysis by Prof. Dr. H. Simonis; Simplified Elementary Analysis by Prof. Dr. M. Dennstedt; Organic Micro-Analysis by Prof. Dr. J. V. Dubsky; Volumetric Analysis by Prof. Dr. A. Sonn; Colorimetry by Prof. Dr. G. Reddelien; Capillary Analysis by Dr. H. Rheinboldt; Heating and Drying by Dr. Ing. Wilhelm Steinkopf; Agitation, Clarification and Decolorizing by Dr. J. Herzog; Decantation and Filtration by Prof. Dr. J. Houben; Distillation by Dr. Christ. J. Hansen; Melting Point by Reg. Rat Dr. Rich. Kempf; Specific Gravity by Prof. Dr. A. Byk; Polarization by Prof. Dr. H. Schreibler; Molecular Weight by Prof. Dr. H. Simonis; Viscosity by Dr. H. Rheinboldt. Some of these names are also well known in pharmacy and pharmaceutical chemistry!

How thoroughly the material is treated can be seen from the following few advantages. The List of Abbreviations used in the book occupies four pages. The value of the work is greatly enhanced by the addition of a copious bibliography in the form of footnotes, for instance seven on pp. 242, 256, 429 and 786, eight on p. 42 and as many as nine on p. 430. The book is fully illustrated with S51 (not 5S1 as stated on cover) excellent illustrations, well arranged and clearly explained. The Appendix contains five very useful tables. The Subject Index consists of 16 double-column pages and the Authors Index of 18 three-column pages.

The book is a library in itself and should be in the hands of all interested and should surely find a place in the libraries and laboratories of our Colleges.

OTTO RAUBENHEIMER, PH.M.

A MEDIEVAL DIET BOOK.

A treatise on how to develop the brain has been found in the archives of Strasbourg. The book was written in 1532 by Laurence Fries and in it he states: "A person who works with his brains, "should confine himself to a diet of the following 'brain foods:' fried fowl, fresh poached eggs (not boiled, fried or scrambled), apples, quinces, hazel nuts and red wine." He especially opposed eating all so-called "red meats" because they develop physical strength to the detriment of mental faculties.

JOHN BARTRAM READ OUT OF MEETING.

Events of about 150 years ago are of interest at this time, because of the Sesqui-Centennial at the A. PH. A. Convention City. John Bartram, whose botanic garden on the Schuylkill still is open to visitors, was read out of Meeting (Friends) because of views not so different from some present-day thought. The step was regretted but the botanist held to his views, and that none might misunderstand his faith he chiseled into a stone over the door of his house, still standing, the inscription:

"To God alone: the Almighty Lord,
The Holy One by me adored—John Bartram 1770."

SPEYER VISITING PROFESSORSHIP.

The Speyer visiting professorship, which was established with a $50,000 endowment by James Speyer, senior member of the banking house of Speyer & Co., New York, is for the purpose of providing for an exchange of knowledge between Germany and the United States.

Dr. Karl Ferdinand Herzfeld, professor at the University of Munich, was the first scientist named under the above provision. He has completed his work at Johns Hopkins and is now at the University of Illinois.

HENRY MILTON WHELPLEY, PH.G., M.D.

ST. LOUIS, MO.

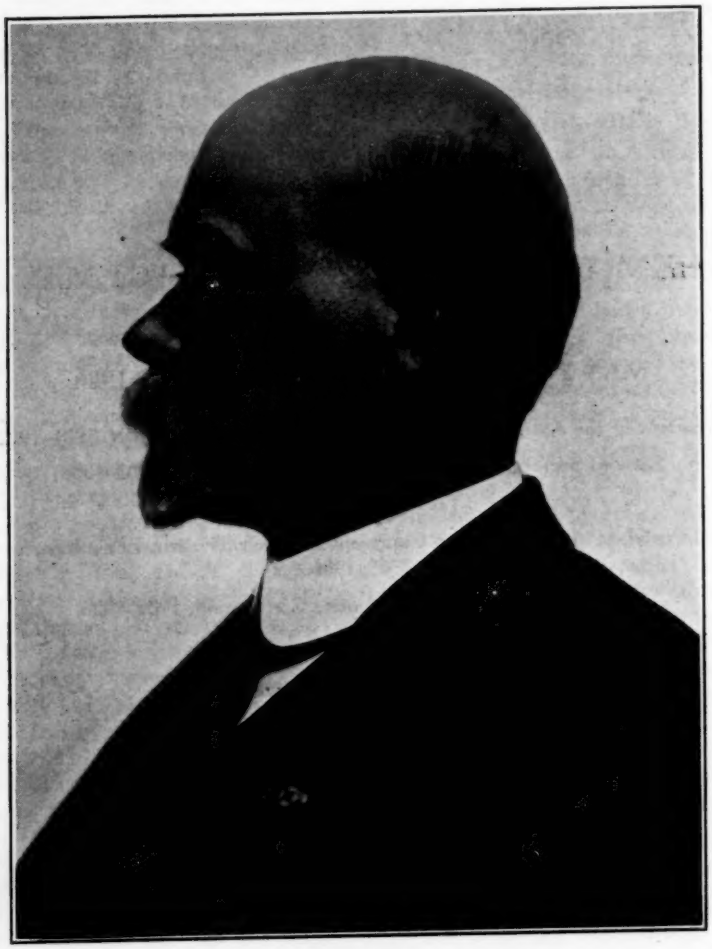
MAY 24, 1861 JUNE 26, 1926

President of the AMERICAN PHARMACEUTICAL ASSOCIATION, 1901–1902;
General Secretary, 1893; Secretary of the Council, 1902–1908;
Treasurer, 1908–1921.

President of the American Conference of Pharmaceutical Faculties, 1905–1906.

Secretary of U. S. Pharmacopoeial Convention, 1900–1926.

For other services rendered see sketch.



H. M. WHELPLEY.